DOCUMENTATION OF WAN SMOLBAG'S VANUA-TAI RESOURCE MONITOR PROGRAM IN VANUATU

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Executive Summary

The Wan Smol Bag (WSB) Turtle Monitor (TM) Program that came about as about as part of the SPREP 'Year of the Turtle' and included the drama 'I am a Turtle' in 1995 has had a significant impact on efforts to sustainably manage turtle resources of Vanuatu. The program started with a small number of rural communities around the central island of Efate that chose TMs to work voluntarily within their communities to promote the sustainable management of declining turtles populations. Driven by community needs, the network has since expanded its role to include the wise use of all natural resources depended upon by ni-Vanuatu and the Program renamed the *Vanua-tai* Resource Monitors (VTRM).

Estimates from this research indicate that amongst the 5 villages of north Efate surveyed, this program has helped to conserve an estimated 120 turtles per year. Over the 10 years since the program began, this would total some 1200 turtles. Through promoting awareness regarding the national legislation protecting dugongs, this survey also indicates a significant decrease in opportunistic harvests of these vulnerable marine mammals. With over 150 villages with VTRMs now found throughout Vanuatu, the benefits of this program are increasingly distributed throughout the archipelago.

Working closely with village leaders within the traditionally derived system of village-based resource management, the VTRMs increasingly provides timely awareness regarding global, regional and national environmental issues from climate change to the threatened status of marine turtles and the value of tagging turtles to the grass roots of Vanuatu. Incorporating cooperative and data-less management techniques, they have also provided considerable awareness regarding the local impacts of destructive fishing practices, new fisheries such as the live reef fish and aquarium trade and the benefits of eco-cultural tourism. Their awareness and education work in their own vernacular languages within their villages has been timely with the continued population growth, introduction of new fishing gear and emergence into the cash economy observed in Vanuatu. This program serves as a positive example to the region of an impressive level of commitment of individuals, communities and their leaders to the sustainable management of resources under indigenous tenure. And to the power of cooperative and dataless management approaches and culturally appropriate awareness by a local NGO in conjunction with government and regional agencies.

Although the program has experienced an impressive degree of success, as evidenced by the increase in villages implementing restrictions associated with turtle and turtle egg consumption, some areas of Vanuatu are still not represented by VTRMs. These communities often continue to indiscriminately consume turtles and their eggs, including the critically endangered leatherback turtle. It is for this reasons that long-term and adequate funding for the program needs to be sourced to support and expand this program to other areas of Vanuatu as soon as possible.

DOCUMENTATION OF WAN SMOLBAG'S VANUA-TAI RESOURCE MONITOR PROGRAM IN VANUATU

The purpose of this report is to profile the WSB Vanua Tai Resource Monitor Program in Vanuatu to document the effectiveness of educational theatre in promoting awareness of resource management issues, how this program came about, how it has evolved, lessons learned and potentially assist other countries in the region with setting up similar programs.

BACKGROUND INFORMATION ON MARINE TURTLES AND THEIR MANAGEMENT IN VANUATU

Marine turtles have been an important food source for Pacific Islanders since the original colonists (known as the Lapita people) arrival to remote Oceania some 3000 years ago. Archaeological remains from this period indicate high frequencies of turtle bones found in Lapita colonization sites, particularly of the green turtle (*Chelonia mydas*) reflecting thriving turtle population in the southwest Pacific (Kirch 1997). Kirch notes the general pattern found throughout the Pacific of heavy turtle exploitation by early colonists evident in the archaeological record, with a subsequent decline in turtle remains in later layers. He infers that their annual nesting patterns made for easy prey and the reduction in later excavation layers reflects a decline in nesting populations. It has also been suggested that increasingly less reliance was potentially placed on turtle as a meat source as other commensals such as pigs and chickens became plentiful and gardens came on stream (Stuart Bedford, pers. comm.).

In Vanuatu, this pattern of turtle exploitation is evident in Lapita settlement sites on Erromango at Ifo, Efate at Mangas, Malua Bay on Malekula (Bedford 2000) and Malo (Galipaud 1998; Hendrick 1971). Bedford reports the presence of turtle remains throughout the archaeological record on Erromango and Efate in small quantities and infers a decrease in turtle population and that these remains reflect occasional opportunistic kills. Their continual, albeit reduced presence could also be taken to reflect the implementation of a traditional management regime introduced to protect turtles from extirpation after the initial impact on the resource by the early Lapita colonists (see Johannes, 2002).

The following observation by Elkington (1907:181) made circa the late 1800's from northeast Malekula supports the contention that there were formerly traditional management practices in place to manage turtle resources. "Turtle fishing is not gone in for much, as the natives are superstitious about the turtle, and civilization has not yet been able to dispel their fears. One of the chief ones is that the eggs are sacred and may not be eaten." Sommerville (1894: 377) similarly notes for the same area of Malekula "Turtles are very common around the reefs, but are seldom caught. The heathen people will not eat turtle eggs…at Uripiv."

Hickey (2006) also notes a number of traditional turtle related taboos found throughout most of Vanuatu that served to decrease fishing pressure on turtles and their eggs, particularly during nesting season. These practices included prohibitions against consuming turtle meat or eggs and going to yam, water taro and other gardens. As the highly esteemed yam gardens were planted and tended during turtle nesting season, this served to significantly reduce fishing pressure during their most vulnerable period. It was also taboo for children and pregnant women to eat turtle meat or eggs in many areas of Vanuatu, as it was believed this led to children developing sores. In some areas, turtle consumption was taboo for those with asthma, as it was found to aggravate their condition. Totemic affiliations with turtles also reduced harvesting pressure in many areas of Vanuatu.

Many of these traditional beliefs and practices are no longer followed by the younger generation in many areas today (while some elders continue to do so), but remain as part of oral traditions. Elkington's (op. cited) observation on this process foreshadows the erosion of traditional management related beliefs. "But one by one their superstitions are going, for they see how the white man prospers in spite of scorning all their sacred ideas, and that now and then makes them courageous enough to break through the barrier ……."

Totemic restrictions continue to exist on some areas of Tanna as it did on Aniwa. Cappel (1958) notes "…..in Aniwa turtle was reserved as chief's food, and could only be cooked by men." On some areas of Tanna, where turtles have a totemic significance and their harvests are highly ritualized and part of traditional exchanges to inland villages, turtle is also considered a chiefly food and harvesting and preparation is strictly controlled by traditional leaders (Hickey, unpublished).

Thus, there is ample evidence for the existence of traditional turtle management prohibitions and controls evident in most areas of Vanuatu prior to European contact. With the gradual erosion of many of these customs after European contact and the introduction of western beliefs, there was a significant decline in management of turtles by the latter half of the 1900s. The increased level of turtle and egg harvests was no doubt exacerbated by extensive migration of inland peoples to coastal areas, especially to protected bays with beaches (turtle nesting habitat) where there was a good boat landing for Christian Missions or copra traders. In many areas, the original coastal inhabitants suffered severe depopulation with the introduction of diseases through contact with Europeans (Bedford 1989). Severe depopulation also contributed to the erosion and loss of traditional knowledge and practices held by coastal peoples.

By the time of Independence in 1980, there appears to have been insufficient traditional management of turtle and turtle egg harvests in many areas of Vanuatu to maintain stable populations[1]. At this time, Fisheries Regulations

[1] Declining turtle populations would also have been partially due to the impacts of global and regional threats including drift nets, fishing gear entanglements, by-catch by longliners as well as ingestion of plastics.

were introduced circa 1983 to protect turtle nests, eggs and prohibit the trade in hawksbill carapaces[2]. The cost and logistical constraints of enforcing these regulations throughout the archipelago meant this regulation was not only poorly enforced, but most communities were not even aware of these regulations existence during a survey of village-based management measures in 1993 (Johannes 1998). Nearly all coastal communities throughout Vanuatu during this period would routinely harvest turtles and their eggs whenever the opportunity presented itself.

This prolonged level of uncontrolled exploitation (along with cumulative impacts of drift-net fishing, long-lining, etc.) led to noticeable declines in turtle populations and nesting areas in Vanuatu (WSB 1995, Hickey unpublished). There was clearly a need for a revitalization of turtle management in Vanuatu, especially with the high population growth rate evident since 1980[3]. However, Vanuatu was not the only South Pacific nation with this concern.

INTRODUCTION OF A REGIONAL TURTLE MANAGEMENT PROGRAM

Given the shared distribution of turtles in the Region and a perceived decline in turtle numbers in many Pacific nations through the 1980's, the Secretariat of the Pacific Regional Environmental Program (SPREP) in conjunction with the Australian National Parks and Wildlife Service (ANPWS) initiated the Regional Marine Turtle Conservation Program (RMTCP) in 1989. Since then, the RMTCP was gradually adopted by member countries within the SPREP region as a focus for turtle conservation. The Program objective was "*To conserve marine turtles and their cultural, economic and nutritional values for the coastal people of the countries served by SPREP*." This program thus recognizes the food and cultural significance of turtles in the Pacific, and does not promote the idea that turtles should not be eaten at all. Annual regional meetings were held at SPREP starting in 1990 with their broad objectives being to;

1) provide a forum for exchange of ideas and information;

2) review progress towards the goals and objectives of the RMTCP; and,

3) assess future activities and prepare a work plan for 1994-96.

The main elements of the Program included population censuses, tagging and monitoring; other research; the creation of a regional information database; public education (posters, school education, etc.); staff training; legislation and regulation review; and other conservation work (e.g., protection of nesting areas, etc.) Most of this early work was primarily Canadian (CSPOD-I) and Australian government funded.

The Vanuatu Environment Unit (EU) is the focal point for SPREP activities in Vanuatu and they have participated in the RTMCP since its inception in 1989.

[2] See Annex 1 for the Vanuatu Fisheries Regulations regarding marine turtles.
[3] Vanuatu's population growth remains at an average of 2.7 % per year with a doubling time of roughly 20 years.

They initiated a country-wide postal questionnaire survey in at this time with the objective of drawing upon traditional knowledge to determine the species of turtles present in Vanuatu along with their geographical distribution, the location of important nesting areas and population estimates.

Prior to this postal survey, little scientific or traditional knowledge had been documented regarding turtle species present or important nesting and foraging areas in Vanuatu. The only reports available from this period were from Pickering (1982 & 1983), who noted that the green and hawksbill turtles were the most common species found along with small numbers of leatherback and noted the olive ridley and loggerhead were 'probably rare'. He also noted the lack of certainty whether leatherbacks nested in Vanuatu.

From the EU postal survey it was confirmed that four species of marine turtle were found in Vanuatu waters, including the green, hawksbill, loggerhead and leatherback turtles. Two species found to breed and nest in Vanuatu were the green and hawksbill. The survey further revealed that turtles were subject to "….heavy exploitation in some islands like Malekula. While elsewhere there seems to be little or no pressure on these resources. Which were interpreted to mean "either these animals are declining in numbers, are rare or not being harvested due to custom or religious beliefs" (Environment Unit,1990). Furthermore, the survey indicated that only the green and hawksbill turtles were common while the loggerhead and leatherback were rare.

Important nesting sites were listed as follows (question marks indicate uncertainty in the original reports).

Table 1. Islands where turtle nesting was found to occur from the Environment Unit postal nesting survey of 1989.

Banks/Torres	Hawksbill ?
Santo/Malo	Leatherback; Green?
Malekula	Green; Loggerhead; Hawksbill
Aneityum	Hawksbill?
Epi	Green; Hawksbill?

Leatherback sightings were also reported from East Coast Santo as well as from South Pentecost.

The main threats to turtles reported from Vanuatu were the destruction of important nesting sites by natural disasters, local exploitation and habitat encroachment by humans.

With the results of the postal survey, The EU then undertook four nesting site surveys with technical and financial assistance from SPREP as follows;

1) Maskelyne Islands, south Malekula, Nov., 1992
2) Mota Lava and the Reef islands in the Banks, Feb.25 - Mar. 4, 1993.
3) Wiawi – northeast Malekula, Nov. 1993

4) Votlo, southeast Epi, Jan.1994

The type and numbers of turtles tagged along with other observations from these surveys are summarized below;

Table 2. Environment Unit's first turtle tagging study results 1992-94.

Location	Date (d/m/y)	Species tagged	Observations
Maskelynes	10/11/92 – 21/11/92	3 Green 3 Hawksbill	No nesting observed; Locals report a decline in turtle nesting & numbers
Mota Lava/Reef Islands	25/02/93 – 04/03/93	1 nesting Green	-on uninhabited Reef islands several nests had been disturbed
Wiawi – NE Malekula	11/93	9 Greens 2 Loggerhead	Identified as an important turtle nesting area
Votlo, SE Epi	01/94	1 Loggerhead	Numerous crawls observed; local Informants identify Votlo as important Leatherback nesting area

THE YEAR OF THE TURTLE

1995 was declared 'Year of the Turtle' for all SPREP member countries in order to promote greater awareness regarding the declining number of turtles in the South Pacific Region. In Vanuatu, the EU coordinated these activities that included the distribution of the SPREP produced 'Year of the Turtle' posters and other awareness materials. SPREP also assisted with the furtherance of the turtle-tagging program. WSB theatre group created a play to raise awareness of the plight of turtles at the village level. The process of developing the play and the subsequent establishment of a Turtle Monitor (TM) Program are covered in some detail in the following section. This is to clearly document this process to elucidate lessons learned and to assist other countries with facilitating similar programs.

THE DEVELOPMENT OF THE WSB TURTLE PLAY AND ESTABLISHMENT OF A TURTLE MONITOR PROGRAM

The development of the turtle play began in August 1995 with the actors going in pairs to villages around North Efate Island collecting information and stories about turtles. The actors would spend a number of days in the villages engaging community members and their leaders in informal discussions on turtles. This was an important step in the process of producing the play, as it ensured communities would have some ownership of the initiative while the actors would identify what the actual informational needs of the target communities were. The theatre group from Ambrym, *Wuhuran* who were the

first to perform the play also provided additional input, for example the custom story from Ambrym that appears in the play.

This initial research component thus provided important information regarding the status of turtles on Efate, peoples' traditional use and management of them, as well as what peoples attitudes and perceptions regarding turtles were as well as what they thought should be done regarding their management.

The key issues and knowledge that were elicited from this research phase of the development of the play, along with information that subsequently emerged during further discussions with village residents, may be summarized as follows;

What people knew about turtles;

- There was a noticeable decline in turtle numbers and their average size around north Efate

- There was a noticeable decline in active nesting areas around north Efate

- Turtle sightings became primarily restricted to night time only, whereas prior to the decline in numbers, daytime sightings were frequent

- There was a decrease in turtle species diversity (with the loss of Leatherback and Loggerhead) around north Efate

- The most commonly found species off north Efate at that time were Green and Hawksbill turtles, and they appear to be present throughout the entire year

- The methods used to harvest turtles had changed to include the use of snorkelling gear and spear-guns/gaff hooks while diving, day or night, for turtles to impale them while they slept. Prior to the decline in nesting sites, they were also harvested seasonally at nesting beaches, where people would wait for them, or occasionally speared opportunistically when found feeding. In a few areas of Vanuatu, turtles were traditionally hunted at night on their feeding grounds where the method of capture was to physically hold the turtle and manipulate them to the surface where they could be hoisted into canoes. The recent adoption of snorkelling gear, U/W torches and spear-guns/gaffs for turtle hunting allowed them to be harvested in any season and while they rested along reef drop-offs. The harvesting of turtles during their resting phase by diving for them was reportedly not practiced in former times. The use of motorized boats also expanded the fishers' range to more isolated areas for turtle hunting, as well as the size and number of turtles that could be transported back to the village.

- Men primarily harvested turtles while women and children mainly harvested eggs, although women would opportunistically capture a nesting turtle and men would also opportunistically harvest eggs

- Everyone from the villages surveyed ate turtles and their eggs, both male and female turtles, large or small – rarely was an opportunity to consume turtle or eggs passed up. Also, all of the eggs found in a nest were always harvested.

- Turtle is a valued food source due to its size and taste (especially when found full of fat) and as such they are used for weddings, fundraisers and other celebrations when meat was required; normally, every part of the turtle is consumed except the material found in the digestive tract. Also, it is often baked in an earth oven in its own shell.

- The sale of the Hawksbill turtle shell was never mentioned as a reason to harvest turtles

- Many people knew the nesting season to be from approximately August to March, and knew the locations of nesting, foraging and resting areas as well as the feeding habits of different species; this knowledge was used to assist in harvesting turtles; people could also differentiate turtle gender on sight based on tail length

- People reported the re-nesting of females two times a season and that eggs took approximately 2-3 months to hatch

- Nest and hatchling predators included pigs, dogs, crabs, birds and fish

- There were traditional management measures such as totem restrictions and yam garden taboo's that protected turtles in the past and that these systems of management were generally no longer well observed in many areas, especially by the younger generation; this was due to the general demise of traditional beliefs and practices due to the influence of the church and western education

- Some people were not aware that there was a Government law regarding turtles while others were unsure of what exactly it was, or what it covered (i.e., turtles, eggs or both?), or why there were regulations for turtles

- One village commented that the Government makes a law to restrict turtle harvests, but does not compensate villagers with food or money for not harvesting resources felt to be under traditional tenure

- Others questioned what is so special about turtles, and why should they worry about them; while others expressed a fatalistic attitude that God intended turtles to finish, and there was nothing they could do about it

- Many villages expressed concern that even if they restrained from harvesting turtles, nearby villages, or people on other islands, would take them. Another cited the nuclear tests conducted in French Polynesia during the mid 1990's, and with that level of marine habitat destruction, what is the point in locally conserving turtles? These sentiments stem from the knowledge that turtles are highly migratory, are thus a shared resource and their management must therefore be a coordinated effort, nationally and regionally

What people did not know about turtles;

- Size or age at sexual maturity for the different species
- That they returned to their natal beaches to nest
- What exactly the Government regulations were regarding turtles, nests and eggs
- How often individual turtles may nest
- The full oceanic range of turtle migrations
- Average survival rate of hatchlings, although they had a good idea that mortality was high
- Where leatherback turtles spent the rest of the year when they were not in Vanuatu during nesting season (they are often referred to as being turtles from 'overseas')
- What exactly they should do to help conserve turtles
- The value and efficacy of turtle 'head-start programs'
- The value or rationale of a turtle tagging program
- The impact on turtles of plastic bags and discarded fishing gear in the sea
- The population status of turtle populations regionally and globally
- Other global impacts to turtles like industrial fisheries by-catch

With this background knowledge from primarily the villages of north Efate, the script was developed and the play produced called "*I'm a Turtle*". It was then taken back and performed in the same villages of north Efate and the offshore islands of Lelepa, Moso and Nguna where the original research was done.

The play interprets the life of turtles highlighting the dangers that befall them throughout their lifecycle through the eyes of a villager that was transformed

into a turtle in order to afford a first hand look at these dangers. Other aspects of their lifecycle, that research had revealed was unknown to most villagers, such as the time required to reach sexual maturity, was highlighted and the full extant of the dangers facing turtles, as eggs, juveniles and adults.

The play avoided just a cold relaying of turtle facts, but brought the plight of turtles to the hearts of people through the empathy created for them, while providing highly animated entertainment in the village. The theatrical medium appealed to all ages from the elders to the youngest of villagers, both male and female. The performances generally brought out the entire community who then took part in the post-play discussion regarding turtles and local issues.

These often-extensive discussions were another important part of the interactive process between actors and community that ensued after the play performance. Community members were often highly motivated to obtain more information regarding turtles and the actors were able to clarify their queries during these discussions. For example, community members were surprised to learn that the tagging program had revealed that individual turtles found in Vanuatu had also been found as far away as Tahiti and Australia. The fact that turtles take as much as thirty years before they become sexually mature also emphasized the time it took for turtle population to recover. This new knowledge often inspired a profoundly new appreciation of turtles in the hearts and minds of villagers. Prior to the play, villagers expressed that they primarily viewed turtles as a source of food, without considering the hardships, and levels of mortality they often faced throughout their lifecycle. This new appreciation paved the way for a change in attitude towards consuming turtles and their eggs at every opportunity.

The actors, who had also developed a strong support amongst themselves for the management of turtles during the development of the play, felt that it would be useful to have individuals from within the community continue to re-enforce the message of the play on an on-going basis from within their own villages. With that in mind, the idea of having TMs in each village was suggested after the play during discussions. The communities and their leaders discussed this amongst themselves and, once agreed upon, selected a TM or sometimes two, to also act as contact person(s) for WSB within the village.

In order to assess the impact the play had on turtle harvesting attitudes, the TMs came together for the first time in November 1995 to discuss turtle management issues at the WSB theatre in Port Vila. Most of the reports from villages were encouraging, indicating a significant change in attitude towards turtles, but some issues remained unresolved regarding the status of the law on turtles, and to whom infractions should be reported to. After discussing the issue, the consensus was that regardless of the Government laws, which seemed to be rarely enforced due to expense and logistical difficulties, the monitors should work closely with their community leaders to better manage turtles.

Most monitors encouraged their chiefs to put a ten-year taboo on killing turtles and taking their eggs to support the main objective of increasing turtle populations. The chiefs' then discussed the idea with their communities to reach a mutual understanding and consensus on this management strategy. Gaining a consensus with their communities before initiating a taboo was an important part of the process, as it meant that the chief was merely implementing the wishes of his community, and not forcing a top-down decision on them, which would then prove difficult to enforce. Some villages found it difficult to enforce a taboo due to internal leadership disputes within the village, and this, along with land disputes are a re-occurring constraint for the management of various resources at the village level (Johannes and Hickey 2004).

Some villages also noted the difficulty in controlling people coming from the nearby Capital, or enforcing the taboo with people from other islands but resident on Efate. These issues are becoming increasingly problematic on the larger islands of Efate, Malekula and Santo where people from smaller islands take residence for employment in towns and large plantations, and may require additional awareness efforts and assistance to facilitate the necessary cooperation amongst mixed communities.

The roles for TMs were also clarified at this meeting and included;

1) Record the number of turtle nests in their area;
2) Record and report infractions against turtle nests;
3) Provide ongoing awareness to communities of the threatened status of turtles;
4) Record the number and types of turtles seen in their areas;
5) Record any tagged turtles observed in their areas;

Other suggestions from TMs included the value of follow up trips from WSB to perform the turtle play again in the same villages and promote further discussions while providing follow-up information and to generally reinforce the earlier awareness efforts.

FOLLOW UP SUPPORT FOR TURTLE AWARENESS AND TURTLE MONITOR NETWORK

A follow up tour was made by WSB around north Efate at the end of January 1996 along with the Fisheries Enforcement Officer, who clarified to communities the Fisheries regulations regarding turtles. Additional tours were subsequently made, also with Fisheries and EU personnel along with an Officer from SPREP. These Officers made brief presentations and the plays were performed, including 'On the Reef' which encouraged good harvesting and management practices for reef resources in general. These awareness tours, assisted by various specialists, allowed for community discussions to range over a wide range of topics of concern, including the sale of 'live rock' and other Aquarium Trade resources as well as beche-de-mer (dried sea cucumber).

Awareness tours that included various specialists from a range of government departments and regional organizations was noted to add significant weight to driving home the message of the timely need for village-based turtle management measures in order to adequately conserve them. These joint tours also helped to create stronger links between WSB, SPREP and various government departments involved in resource management.

The first formalized training workshop for TMs was organized in late February 1996 at a rural tourist facility (Tuk Tuk Ranch at Devils Point) that included a turtle nursery as part of a head-start program. Presentations were made by Fisheries and EU representatives along with the SPREP Officer who further clarified aspects of turtle lifecycle and gave training on tagging turtles through demonstration. The SPREP turtle specialist noted that this was the first initiative in the region where community members were trained and provided with equipment to tag turtles. Through this workshop the monitors' knowledge and understanding of turtles' lifecycle and the regional tagging program increased significantly.

With the increased knowledge and practice, as well as initial positive impacts on reducing subsistence pressure on turtles and eggs during the first nesting season since the program started, the Efate TMs felt that their small network needed to expand to cover other islands in Vanuatu. This stemmed from the knowledge that turtles are migratory and therefore their management efforts around north Efate would be undermined if the same turtles would be killed and eaten by people on other islands.

Thus the expansion of the turtle monitors network to the other islands in Vanuatu began in 1997 and still continues today, resulting in more than 200 monitors all over the country distributed throughout some 150 villages. Figure 1 indicates the current distribution of TMs found throughout Vanuatu as of the end of 2004. It is estimated that currently, roughly seventy percent of the nation's islands have a turtle monitor presence. In the remaining thirty percent, however, turtle and turtle eggs consumption generally continues unabated due to a lack of awareness regarding the endangered regional and global status of turtle resources.

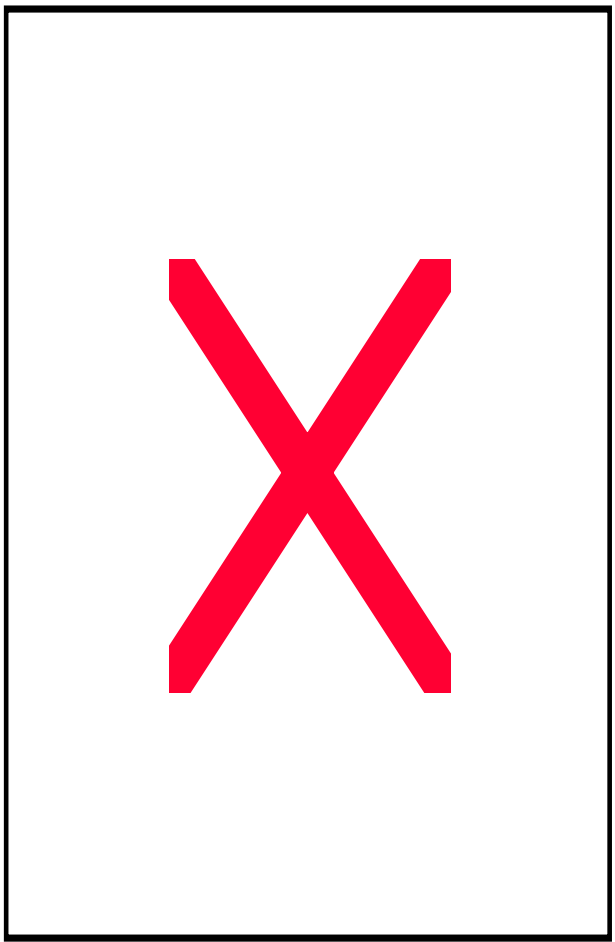

Figure 1. Distribution of TMs in Vanuatu (shaded areas).

This is of particular concern for leatherback turtles that are now considered critically endangered

in the western Pacific (Spotila, et. al., 1996). In some areas of Vanuatu, they continue to be opportunistically consumed as they come ashore to nest after a long, often hazardous journey to offshore foraging grounds. Spotila et. al. estimated the populations of 28 leatherback nesting beaches from around the world and concluded that the population from these sites had declined from an estimated 115,000 in 1980 to about 42,900 by 1995, a decline of two thirds in 15 years. The western Pacific population of nesting leatherbacks were estimated to be “in very low numbers” and “rare in the Indian Ocean”. The largest population is in the western Atlantic, but that they are “being exploited at a rate that cannot be sustained”. They conclude that “leatherbacks are on the road to extinction and further population declines can be expected unless we take action to reduce adult mortality and increase survival of eggs and hatchlings.” In light of these threats, WSB and the TMs have recently commenced the monitoring of leatherback nesting sites, particularly on Epi, Ambrym and Malekula Islands. Initial findings indicate a number of active leatherback nesting on these three islands while there has been almost a complete loss of nesting sites over the last 30 years on other islands including on Ambae, Santo, Aneityum and Tanna (Petro et al, in Press).

ANNUAL TURTLE MONITOR MEETINGS

Every year there are annual workshops where TMs come together to exchange ideas and experiences as well as discuss a wide range of contemporary issues from family planning to climate change. Further training is provided and information and awareness materials concerning these issues are distributed to monitors. After the workshops, the TMs take this relevant information back to their islands to introduce to their communities. In this way, the monitors have become a link for community’s to the outside world to access necessary information and awareness regarding a range of environmental and resource management issues. Being community members, the monitors can present the material at an appropriate level in their own vernacular language to their communities. They may also draw upon the wealth of relevant information regarding their own community’s traditional and socio-economic considerations in introducing new information and insights to their communities to instigate changes in attitudes towards resource use and management.

Life can sometimes be difficult in rural areas in terms of providing for large families and generating the necessary cash to meet contemporary needs, and the TMs sometimes encounter considerable pressure from their communities when promoting sustainable resource management. Although rural people remain largely self-sufficient throughout the production of most of their own food in gardens, through animal husbandry, hunting and from the sea, rural residents also need modest sums of money for consumables such as soap, sugar, kerosene and particularly school fees for their children. One or two turtles provide a significant amount of meat for a small rural village as well as potentially generating modest revenue when prepared and served at fund raising events. Despite the resistance they sometimes face in their efforts, there are a lot of dedicated monitors working strictly on a voluntary basis with

their leaders and community members to promote awareness regarding resource management issues and ensure the sustainability of their natural resources.

In the year 2000 the TMs decided that it was time to formally expand their role in the villages, and not only promote better turtle management, but also for other resources, both marine and terrestrial. This was in response to the needs of their communities, who require timely access to information and advice on a wide range of resource management topics. These needs stemmed from the intensifying efforts by the government in promoting national rural development policies including tourism (Hotel/Resort developments) and resource extraction including logging, fishing and various nearshore resources including mother-of pearl shells, beche-de-mer and the sale of Aquarium Trade products. The turtle monitors decided to change their name, so that it better reflects this metamorphosis of their roles. They decided the name *Vanua-tai* Resource Monitors (VTRMs) would be more appropriate drawing upon the vernacular terms "*Vanua*" which means land and "*tai*" referring to the sea.

In 2001 they also decided that there should be women monitors in addition to the network of men initially established. Women play a significant and often under-acknowledged role in providing for their families, not only through gardening activities, but also through fishing and reef gleaning for a multitude of marine resources. Some monitors reported how women in their community relied on destructive and unsustainable harvesting practices including the use of iron bars to extract giant clams, octopus and other resources from the reef. The need to provide awareness to women on sustainable harvesting practices could be best facilitated by including women as monitors. They would also be trained at the annual workshops and then return to their villages to share this knowledge with the other women of their villages. Since that time, some communities have chosen their women monitors' and some of them have attended workshops with the men monitors.

With the continuing evolution of the monitors' role in rural villages in response to the changing needs of community's, the objectives of the program have also been recently revised to address this metamorphosis. The current objectives include;

- To promote and monitor the sustainable use and management of marine and terrestrial resources through the provision of awareness and education at the community level including to men, women and children.

- To work closely with village leaders and their councils in promoting and strengthening the use of appropriate traditional management practices to sustainably manage natural resources under community tenure.

- To collaborate with communities in promoting and establishing eco-cultural tourism and other sustainable income generating activities to benefit the community as a result of the wise use of natural resources.

- To liaise and collaborate with other NGO's, government departments, regional and international bodies in advocating and promoting sustainable resource management and environmentally appropriate development activities in communities.

- To provide a forum, through the provision of VTRM meetings and workshops, to promote dialogue and discussion on relevant environmental issues amongst VTRMs of various islands of Vanuatu.

- To provide awareness and cooperative management training and education on a variety of environmental issues to VTRMs, village leaders and communities.

As the monitors network continues to grow and the impact of their work has had a significant impact on improving village-based resource management, many communities have started to reap the fruits of the monitors' work. The monitors are hopeful that their work will continue to develop into the future with the necessary support required, be it financial, technical or in other forms to support their voluntary work throughout the islands of Vanuatu.

CONSTRAINTS TO THE SUCCESS OF THE WSB TURTLE MANAGEMENT PROGRAM

1) It is often necessary to provide additional information, encouragement and ongoing support, especially initially, to secure the understanding, trust and support of communities in implementing management measure on turtles and other resources. This requires a commitment of financial and human resources.

2) WSB reports limited initial support from government regulatory bodies including Fisheries (who rarely enforce turtle regulations due to logistical and financial constraints) and EU (the focal point for SPREP's RMTMP). This cooperation has improved significantly however since the program has proven its effectiveness in enhancing village-based management.

3) Some village chiefs' offer only limited support to VTRMs in managing turtles and other resources; this sometimes relates to internal village disputes, as well as differences of opinion as village leaders have a wide range of responsibilities to their people beyond turtle conservation.

4) Limited long term funding as of yet available to support the existing monitor network as well as expand the network to other areas of Vanuatu. Without this support and expansion, villagers who exercise restraint in managing turtles lose interest knowing that neighbouring islands continue to exploit the same turtle population.

5) Need for the monitors to feel they are growing and having a positive impact in influencing resource management in their villages. Without this sense of accomplishment, it is difficult to maintain the commitment that is required of them.

6) How to respond, as turtle numbers appear to increase, and pressure from villagers to again harvest turtles grows stronger. Most TMs believe the taboo should continue, as they believe it takes longer than ten years for slowly maturing turtle populations to truly recover.

7) Cyclones and other disasters may destroy turtles feeding and nesting areas despite community efforts to manage well. Also, social and cultural practices in some areas means turtles are an important food source in some areas. At the same time, however, these traditional practices provide tangible incentives for communities to manage resources well for food security as well as ensuring a future for their traditions.

SURVEY METHODOLOGY

In order to understand the changes that occurred in villages as a result of the work of the VTRMs, a series of basic questions were prepared to assist in documenting the impact of the program by way of village surveys. Informal semi-structured interviews were conducted with a number of VTRMs in their communities around north Efate as well as in the Maskelynes islands where the custom of turtle hunting and consumption remains strong. The value of semi-structured interviews has been well documented to allow for the topics to include issues of local importance (Johannes et. al., 2000).

The objective was to learn from the VTRMs what they believed were the impacts of their work as well as discuss the types of problems and constraints they encountered. Also, to document the types of turtles present, nesting and foraging areas as well as what type of turtle traditions were found. Additional interviews were conducted with VTRMs from various islands while they attended their annual general meeting (AGM) held at Epau village on Efate in March, 2004, and information from those responses were also synthesized into the results. Discussions were also held with Government officials that are involved in turtle management, for example the Department of Fisheries and Environment Unit. The complete results of interviews with VTRMs are given in Annex 3.

SURVEY RESULTS

The results of the survey are summarized in Table 3. They reveal that shortly after showing the Turtle Play and the initiation of the TM Program, most villages of north Efate initiated a 10 year taboo on killing turtles. The TMs also encouraged their chiefs to enforce the national legislation to not harvest turtle eggs. Their roles eventually diversified to include providing awareness regarding a number of other resource management and environmental issues.

By the time of this survey close to 10 years after the programs initiation around north Efate, the number of turtles was found to noticeably increase, the number of nesting areas stabilize, and in some areas increase.

Table 3. Summary of VTRMs Survey results.

Village	**VTRMs & (Roles)**	**Turtle Management & (Compliance)**	**Turtle Status**	**Turtle Traditions**	**Dugongs**	**Training**	
Tanoliu	Donald James (1995)-Roles (Diversified Roles since 2000)	Long-term taboo on turtles (Good)	#s >> no nesting (lack of habitat)	M'ment taboo	Yes	Tagging & awareness workshops	Village leadership dispute
Mangaliliu	1)Vatunmanu Billy (1995) 2) Matai Elo Kalsong(2001); (Diversified)	Long-term taboo on turtles & eggs (Good)	Mostly HB; #>>; Some nesting	M'ment taboo	Limited due to lack of habitat	Tagging & awareness workshops	Work with schools & youth
Emua	1)Chief Albert Manlaesinu 2)Asst. Chief Ben Manlae Uri Sari; (Diversified)	Long-term taboo on turtles & eggs (Excellent)	Green>>> HB >>> Recent Nesting >>>in village	M'ment taboo	Abundant; (est. 9-10) Formerly ate 1-2/yr; Now taboo	Tagging & many awareness workshops	Tourism Develop.
Pananganisu	J. Kaloran(1995) T. Taripu(1995) (Diversified)	Long-term taboo – eat ceremonially (Good)	Green>>> HB>>> Nesting >>>(G?)	M'ment taboo	Abundant; (est. 15-20) Formerly ate 1/yr;	Tagging and many awareness workshops	Large village w. some internal dissent
Takara	Tele Bill (1995) (Diversified)	Long term taboo- eat on special occasions	Green>>> HB>>> Nesting	M'ment taboo	Estimate 5 resident	Tagging & many awareness Workshops	Wish to dev. ecotourism

		(Good)					
Pescarus	Pescarus Village John Legat (1995) Titua Noguf (2003) (Diversified)	Controlled harvests – even more so now that resources have declined; eggs taboo	Green <<< HB <<< Nesting has stabilized since 1995	M'ment taboo; Harvests & ceremonial consumption at New Yam;	Dugongs present	Tagging & many awareness workshops	Recent annual quota for each village
Avok	Avok, Kami Hailip (1998) (Diversified)	Restrict turtle harvests to New Yam since 2003; no more eating eggs since 1998	Green <<<< HB <<<<< Nesting has stabilized	None recalled		Maskelynes workshops of 1998, Epau 2003, Pescarus 2004 & Tagging	

It is apparent that with the initiation of the turtle taboos around north Efate, that the Program has assisted significantly to conserve the number of turtles found in these areas. Estimates of the numbers of turtles conserved are outlined in the Table 4.

Table 4. Estimates of turtles eaten/year before and after VTRM Program and number of turtles conserved.

Village	**Turtles eaten/year prior to VTRM program (& year started)**	**Turtles eaten/year since VTRM program**	**Turtles conserved/year & since VTRM program initiated**
Tanoliu	<1995 – 5/year due to decline; prior to decline many more	1/year	4/year for 10 years= **40 turtles**
Mangaliliu	<1995- 5/year due to decline; prior to decline many more	1/year	4/year for 10 years = **40 turtles**
Emua	< 1995-5/month = 60/year	5/year	55/year for 10 years = **550 turtles**
Puananganisu	< 1995 – 4/month = 48/year	22/year (20 poached & 2 at New Yam)	26/year for 10 years = **260 turtles**
Takara	< 1995 – 4/month = 48/year	16/year (12 poached & 4 ceremonially)	32/year for 10 years = **320 turtles**
Maskelynes - Pescarus, Pelong, Lutas villages	<1995 - 140 turtles /year including at New Yam	2004 annual quota introduced for these 3 villages = 48	Decline through 1990s due to resource decline; quota only recently introduced
Avok	<1995 – 114 turtles /year including at New Yam	2004, annual quota introduced = 9	Same as above
TOTALS for 5 north Efate Villages	166 turtles/year	45 for 5 Efate villages	121/year or estimated 1200 over ten years

These figures represent the results of just 5 north Efate villages surveyed (the Maskelyne figures are not included as TMs were only established there much later and reduction in consumption has been primarily related to a decline in the turtle population) and indicate that an estimated 120 turtles a year are being conserved since 1995. Over the ten years since the program was initiated, an estimated 1200 turtles were not eaten in the north Efate area. Given that there are about 150 villages now with VTRMs throughout the country, the number of turtles annually conserved nationally would be considerable. Given that many villages throughout Vanuatu do not necessarily have a strong tradition of consuming turtles (as in the Maskelynes, for example) and that some lack good or extensive turtle habitat, one could estimate that many of these villages, on average would consume only 5-10 turtles/year on average. Taking this annual estimate of 5 – 10 turtles conserved by each of the 150 villages, this would total an additional 750 – 1500 turtles conserved annually. Taking a median of these estimates, the VTRM program conserves an estimated 1000 turtles per year throughout the country. Also, these figures do not reflect the potential increase in turtle recruitment due to a significant decline in the number of turtle eggs no longer eaten since 1995 following the awareness efforts of the VTRMs and the voluntary enforcement of this regulation by village leaders.

DISCUSSION

Turtle Monitors and Roles

Many of the TMs found on north Efate started with WSB in 1995 at the outset of the program after the performance of the turtle play. In some cases new ones were appointed when original TMs left their villages for employment or became too busy with other demands within their communities. The TM roles were originally to provide follow up support to communities and their leaders within their respective villages on the need for turtle management as well as act as contact people for WSB. They would conduct ongoing awareness regarding the need to reduce turtle harvests and to respect the national legislation regarding not eating turtle eggs. Emphasizing the underlying rational behind the national regulation against eating turtle eggs in order to assist the turtle population to recover through local recruitment was an important point, as villagers were sometimes ignorant of the reason why there where regulations protecting their eggs (Johannes 1998).

They would also encourage their leaders to impose either a taboo on killing turtles, or restrict turtle consumption to specific occasions when authorized by their leaders, often in consultation with the TMs, until such time as the number of turtles in their area had increased. They would also report unauthorized turtle consumption or the harvesting of turtle eggs to their leaders, or in some cases to the Fisheries Department.

Due to the recognized decline in turtle numbers, people were increasingly receptive to the TMs message. A powerful tool for driving home the message of the vulnerability of turtles was for TMs to draw upon the remarkable life cycle of turtles, especially the time it takes for them to reach sexual maturity, the high mortality of hatchlings and the long, often perilous migration adults often undertake between feeding and nesting grounds. These points seemed to have had a significant impact in developing a new appreciation of the plight of turtles amongst villagers who had routinely killed and eaten them without giving a thought to all the turtles had survived to date.

Another unique role within the community was to tag turtles as part of SPREP's regional tagging program. Originally, there was funding to provide small incentives to villagers to bring turtles, either caught incidentally in nets or caught for the express purpose of tagging, such as caps or T-shirts. Villagers appreciated these incentives as recognition of the effort it takes to capture and transport a turtle back to the village for tagging. Once the funding for these incentives ran out, villagers provided fewer turtles for tagging purposes.

An additional role was to keep a record of any turtle tags recovered within villages, including their address and numbers so that these data could be correlated with the time and place of where the turtle was originally tagged. The data sheet used by monitors for recording turtle tagging information in Bislama is provided in Annex 2.

One of the constraints experienced with the tagging program has been the lack of feedback to the TMs on the results of the tagging program. The original idea was for the recovered tags and data sheets to be forwarded from the various TMs (often brought with them to the AGM) to either Fisheries or WSB. From there they were forwarded to the RMTCP at SPREP for entry into a regional database for analysis and reporting. However, due to financial constraints within the RMTCP, this data was never fully entered and analysed. Efforts to facilitate this are now underway with the recruitment in 2004 of a Database Officer within the RMTCP.

The TMs role of raising awareness and advising traditional village leaders and their councils on resource management expanded originally to include other relevant issues including the harvest of beche-de-mer and Aquarium Trade (AT) products. These included the sale of 'live rock' (dead coral covered in encrusting marine growth), giant clams (Tridacnidae) and ornamental fish. With the easy road access to north Efate villages, a number of beche-de-mer and Aquarium Traders would visit north Efate to purchase these products from the villages. In response to these pressures and the need for awareness

on these issues, WSB came up with two more plays, one on Beche-de-mer, the other called ‘On the Reef’ (now on video). The latter play was developed to compliment SPREP’s ‘Year of the Reef’ in 1997.

With the increasing need for access to information by villagers on resource use and management issues, broader awareness and training was given to the TMs at their AGM. Fisheries Officers would make presentations to provide clarification on existing marine resource legislation including for turtles, information on the lifecycle of commercial and other important resources like trochus (*Trochus niloticus*), green snail (*Turbo marmoratus*) and coconut crab (*Birgus latro*), crayfish (*Panulirus spp*.) as well as mangroves and corals. The EU Officers would make presentations on programs such as the Vanuatu National Biodiversity Conservation Strategy including the recent work done by the EU to document freshwater biodiversity in Vanuatu. The Cultural Centre would discuss the work they have done to document traditional fishing and management practices while emphasizing the relevance of basing current resource management regimes on traditional models and highlighting the value of using traditional knowledge in resource management. Forestry Officers would come and clarify Forestry Regulations including the introduction of a new Code of Logging Practices while and Meteorological Department would make presentations on Climate Change issues. WSB would provide information on family planning, while emphasizing how population growth relates to resource management issues.

In this way, the TMs are exposed to a broad range of issues relevant to their communities that they can take back to their respective communities for dissemination, discussion and awareness raising. Awareness materials in the form of booklets, posters and videos/DVDs are also distributed to the TMs at this time from the various presenters for use on their islands in raising awareness.
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Turtle Management

After the introduction of the Turtle Play to communities around north Efate in 1995, many communities and their leaders were receptive to introducing management measures to assist turtle populations recover to former levels. Many TMs encouraged their leaders to introduce long-term taboos on turtle harvesting and total taboos on the harvesting of turtle eggs (in line with national legislation). Many of the village leaders responded by introducing a 10 year taboo on harvesting turtles, or in some cases allowing occasional turtle harvests for special occasions such as for community fundraisers, around Christmas or New Yam or the opening of a new church or *nakamal* (traditional meeting house). In general, the leaders were willing to enforce the ban on taking turtle eggs on behalf of the government given its obvious management value. With the awareness work of the TMs, it was now obvious how important it was to respect the nests and eggs of turtles to provide turtles into the future.

Many of the north Efate communities, and throughout Vanuatu, for example the villages of Avok, Hokai and Neranium of the Maskelynes area of southern Malekula were originally from inland areas. It was only in the last century that they had migrated to the coast in response to missionization and for access to trade goods and employment at coastal plantations. Inland people generally have a less historical association with turtle and turtle egg eating traditions. For this reason, these villages have never been particularly dependant on turtles as a source of meat, and they primarily only eat these resources on an opportunistic basis. For this reason, it is often easier for these communities to accept a taboo on eating turtle meat and eggs. The alternatives of fish and shellfish, pigs, chickens, cattle and freshwater resources like eels and prawns are often available as sources of meat. Also, many communities have a stronger tradition of eating pig, rather than turtles, at traditional ceremonies.

Many villages, however, even if they originated inland, have some vestige of traditional turtle management practices. The most common one found in most areas of Vanuatu is the taboo against going to yam, taro and other gardens after consuming turtle meat or eggs (Hickey 2006). As yam-growing season coincides with the turtle-nesting period of the hot summer months, this traditional taboo serves to reduce turtle consumption during their most vulnerable period. As noted earlier in this report, turtles and turtle eggs were considered ‘sacred’ and were not eaten in the late 1800s in the area of northeast Malekula (Elkington 1907, Sommerville 1894) . In some areas there are totemic restrictions against eating turtle meat and eggs (Cappel 1958). Through research performed in preparing this report it was determined that in areas that traditionally hunted turtles such as in the Maskelynes, there were further taboos that controlled and limited who could be involved in such activities. For example, it is taboo for men with pregnant wives to join the turtle hunting party, thus reducing the number of eligible hunters. It is also taboo for men with pregnant wives to participate in the cutting of turtle meat in preparation for the feasting at New Yam. It is also taboo in many parts of Vanuatu for pregnant women and young children to eat turtle meat and eggs, as it is said to affect the children, including the unborn, like them developing sores. On north Efate it was also reported that it is taboo for those with asthma to eat turtle meat, as to do so aggravates their condition.

These various taboos or behavioural restrictions often acted synergistically to create a management regime for turtles and various other marine resources. Unlike western models of resource management, the management of resources was not confined to a compartmentalized corpus, but permeated all aspects of traditional life. For a more detailed discussion on traditional marine resource management knowledge, practices and beliefs of Vanuatu see Hickey 2006.

Many villages of north Efate (e.g. Emua, Lelepa, Mangaliliu, Tanoliu) have put long term taboos on reef areas in front of their villages to prevent over fishing in close proximity to their village or to allow these areas to recover from over fishing in the past and in some cases are used as sources of seafood for special occasions. These areas are generally closed to all harvesting of any marine resource, and this includes turtles.

Most villages in Vanuatu today also implement regular rotational taboos over different reef areas thus creating a mosaic of spatial-temporal refugia for marine life (Hickey and Johannes 2002, Johannes and Hickey 2004). This system stems directly from, or represents a contemporary derivation of the traditional system of resource management formerly found throughout Vanuatu (Hickey 2006). These spatial-temporal refugia generally cover all marine resources including turtles. With the increase in monteziation of marine resources that occurred throughout rural Vanuatu in the early 1990s as a result of national economic development efforts, the Department of Fisheries initiated a cooperative management program to assist communities in managing their resources (Amos 1993, Johannes 1998). Stemming from these developments, it is now common to find species-specific taboos imposed by community leaders on the harvesting of commercially important species such as trochus, green snail and beche-de-mer, (Hickey and Johannes 2002, Johannes and Hickey 2004).

With the awareness efforts of the Vanua-tai program, turtles are increasingly becoming another commonly found species-specific taboo in most villages with TMs. A survey done comparing marine resource management measures in 21 villages between 1993 and 2001 indicated the complete lack of turtle taboos in any of the villages in 1993 (prior to the Year of the Turtle) while in 2003 over half the villages restricted turtle harvests (***op cite***). There was a clear correlation between the presence of a TM and the introduction of turtle taboo amongst villages as those villages without TMs continued to harvest turtles and in many cases their eggs (***op cite***).

Additional gear restrictions regularly placed by village leaders in Vanuatu to protect marine resources, although not specifically turtles, potentially provides management value for turtles none-the-less. These include banning the use of nets and spearguns, particularly the use of spearguns and torches while night diving. As turtles and dugongs are often caught in fishers nets set over reef flats, especially during the night as they feed over reef or seagrass beds, the banning of nets would reduce these incidental captures. Another contemporary method of catching turtles is to snorkel and shoot them with spearguns (or impale them with gaff hooks) while they sleep off reef drop-offs during the night. Fishers out night diving are often in pursuit of fish, but when coming across a sleeping turtle, will opportunistically take them as well. Banning night diving to protect vulnerable species of fish that also sleep on the reef at night, such as parrot fish (Scaridae) and the bump-headed wrasse (*Bolbometapon muricatus*), also reduces the number of turtles taken while they rest at night. In a survey of village-based taboos found in Vanuatu in 2001, banning the use of nets and spearfishing, at least for part of the year, were found in 7 and 8 villages respectively, of the 21 villages surveyed (***op cite***).

Status of Turtles

The number of turtles now seen around north Efate has been observed to increase. As it is too soon for this to be due to recruitment effects, it is due to either adult turtles moving into the area, turtles losing their former wariness or both. This observation applies to both green and hawksbill turtles.

Nesting sites had declined in recent years prior to 1995. This was due to an increase in human population impacting nesting areas, as well as the unabated consumption of turtle eggs and nesting adults prior to 1995. With the taboo on these two activities, the numbers of nests observed have started to increase. The return of turtles to nest at Emua village in 2002, the first time for 40 years, has validated the value of the taboo to villagers and given added motivation to maintain the ban to continue to see the benefits. Turtle nesting has also resumed at Kagula Island (once known as Turtle Island) in 2003 for the first time since anyone can remember. The nesting in the area east of Mangaliliu has not resumed, but much of this land has recently been leased for development, mostly in the form of expatriate housing. West of the village, it has been difficult to monitor these beaches, along with the uninhabited Eratoka (Hat Island) due to the remoteness of these areas. In other areas like Takara, no significant increase in nesting has occurred yet, but nesting seems to have stabilized and stopped its decline from the 1970s and 1980s.

The increase in turtles and nesting has been significant enough that villagers begin to ask when they will be allowed to again harvest turtles. The TMs explain that given their time to sexual maturation, and the fact that turtles are threatened globally, it is premature to lift the taboo on turtles yet.

Turtle Traditions

None of the communities on north Efate could recall a particular custom, or an annual feast that was centred on turtles, as with the New Yam Festival of the Maskelynes. As some of these communities originated from inland areas and migrated to the coast more recently since European contact, this is not surprising. However, that all of these communities have management-related prohibitions concerning consuming turtle meat and going to yam gardens would indicate that there was some turtle consumption as part of their traditions. This may have been limited seasonal consumption during nesting periods within the constraints imposed by the gardening taboos (Hickey 2006). Additional management related taboos found across north Efate included the prohibition of pregnant women or children eating turtles. This prohibition also applied to those with asthma in some areas. There was also an area that had turtle as a totem, and people within this totem group where prohibited from eating turtle.

It is unclear amongst the northern Efate communities if they ever had a tradition of catching turtles over their feeding grounds by physically holding them as is the case in the Maskelynes and some other areas of Vanuatu. However, oral history records the use of lights, mostly lanterns, in canoes with the fisher using an iron tipped spear to impale turtles. This method has given way in this generation to the widespread use of snorkelling gear, underwater torches and spearguns (or gaff hooks) to catch turtles on the reefs. This is

mainly done while they rest, by day or night, on the reef drop-offs. They are also occasionally caught in gill nets set over the reef, or when used as a seine net for fish, especially at night when the turtles could not see the net.

In the language of north Efate, (*nakanamanga*) turtles are referred to as *Fonu*. Hawksbill turtles are called *Fonu namati* (*namati* = reef; thus indicating their preferred habitat for feeding and resting) while green turtles are termed *Fontao* (*tao* means to 'cover up' and is interpreted to mean 'cover up a nest').

Other Comments

Some of the north Efate communities never depended too heavily on turtle as a source of meat, and have other options such as fish, shellfish as well as cattle, pig and chickens as substitutes. Some residents of these villages have joined the cash economy through tourism ventures, paid employment, logging, fishing and exporting produce to markets in the Capitol. This, along with the fact that most villagers themselves had witnessed the decline in turtle numbers, has helped them to accept a long-term taboo on turtle harvesting.

The growth of eco-tourism on north Efate is becoming an increasing incentive to manage turtles well, as well as marine resources in general, as the attraction to snorkel and dive healthy reefs while being able to catch a glimpse of marine turtles is an added attraction.

Maskelyne Islands

Background Information on Maskelyne Islands

The Maskelyne Islands are an unique area in Vanuatu in that they represent probably the largest coral reef concentration amongst a small group of inhabited and uninhabited offshore islands .The three main villages of the Maskelynes - Pescarus, Pelong and Lutas - are all located on the main, small island of Uliveo. Nearby to the west is the village of Avok on a small island of the same name and on the adjacent mainland are the villages of Neranium and Hokai. These last three villages speak a different language and their inhabitants originate from inland Malekula. They settled on the coast in the early 1900s.

These six villages of the Maskelyne Islands area rely heavily on marine resources for both subsistence as well as commercial purposes. Trochus, green snail and beche-de-mer have been particularly important commercial resources in this area since the trade in these resources began in Vanuatu. The purchase of reef fish and other nearshore resources like octopus and spiny lobsters has also been commercialized since the mid-1990's. Recent surveys by the Department of Fisheries and SPC indicate the local extirpation of green snail, a severe decline in trochus population as well as a decline in reef fish (Kalo Pakoa, pers. com.). The decline in nearshore resources is believed to be related to an increase in population, an increased reliance on

the cash economy, the introduction of monofilament nets and spearguns as well as improved access to Port Vila markets since the mid-1990's.

Customary Turtle Harvesting in the Maskelyne Islands

Oral traditions and practices indicate a long history of turtle harvesting in the Maskelyne Islands. Turtles are traditionally harvested as they feed inshore at night using burning coconut fronds as a light source. Two teams of canoes would operate together, one close to shore where turtles are known to be feeding over seagrass beds that scare them to deeper water by slapping the sea with poles used to propel canoes in shallow water. The other canoe team of 2-3 canoes, consisting of at least 3 fishers in each canoe, forms a line parallel to the shore in less than 2-m of water, also poling along in the shallows. Using the light of burning coconut fronds held by the fisher seated in the middle of the canoe, this team keeps a watchful eye for turtles taking flight seaward to deeper water. The other two stand fore and aft and pole the canoe along while watching for turtles. Once the turtles are sighted, the canoes quickly pole into position and either the man in the bow or stern of the canoe dives into the water to hold the turtle. The fisher uses one hand to grip the carapace at the top while the other hand forces the carapace down near the hind limbs, thus orientating the turtle with his head upwards. Consequently, as the turtle struggles to escape by using his flippers, it is forced to swim to the surface where other fishers await to assist in hoisting the turtle into the canoe.

This process is repeated in adjoining areas and once the harvest is finished for the night the fishers make their way back to their village. Upon nearing the village, a traditional song announces to those on shore the number of turtles caught. Another method used during nesting season is to wait on the beaches at night for nesting turtles to come ashore. They can then be flipped onto their backs to immobilize them until they can be loaded into a canoe for transport back to the village.

Contemporary Turtle Harvesting Methods

With the introduction of iron implements after European contact came material strong enough to penetrate a turtle's carapace. Wooden spears are said to be unable to do so. Today, turtles may be caught by a variety of contemporary methods, for example when feeding over seagrass beds at night with the use of a light. Once approached from a canoe the barbed spear can be thrust at the turtle. This is also done when turtles are found in deeper water on the surface feeding on floating seagrass fragments by spearing them from a canoe with an iron tipped spear. This method no doubt became increasingly popular throughout Vanuatu with the introduction of iron and is commonly employed in many areas today. A float may be tied to the spear to assist the process of tiring a large turtle before loading it into the canoe. With the use of outboard powered boats it has become easier to run a turtle down for capture when finding them feeding in shallower water, or, in deeper water to run them down until they are exhausted and are then easier prey to holding or spearing.

It is not uncommon to encounter turtles mating in the surface waters of the Maskelynes prior to nesting season. Until recently, when a passing canoe came across mating turtles it was standard procedure to lift the top turtle (the male) into the canoe, and if there was sufficient manpower available, to also hoist the female into the canoe as well. (Turtle fishers report that mating turtles will not dive to escape predators, but once the two are separated, the female will attempt to escape). With the awareness work of the TMs, this practice has declined significantly as people come to understand the importance of not interfering in the reproductive process in order to ensure a healthy turtle population.

With the now widespread use of snorkelling gear, including u/w torches, turtles are also easily harvested while resting along the reef drop off. In the Maskelynes it was stated by a fisher that “We know where and when the turtles sleep and dive for them there at these places.” The shift from the traditional practice of jumping from a canoe at night to hold a feeding turtle and wrestle it to the surface to diving for them where they are known to sleep and shooting them with a speargun or impaling them with a gaff hook sometimes attached to a float has significantly contributed to the decline in turtle numbers in this area.

The New Yam Festival

This is an annual custom celebrated nearly everywhere in Vanuatu with the ripening of the first yams and serves to ritually open the yam harvest season while giving thanks for a bountiful harvest of this esteemed root crop. In the Maskelyne Islands, it is celebrated on February 4th (early relative to many areas) and the yams harvested for this occasion are eaten with turtles. It is not clear how old this tradition is, but is now well entrenched into the customs of the three main villages of Pescarus, Pelong and Lutas. This is an important event in the annual cycle of festivities held in the Maskelynes.

Turtles are collected prior to the New Yam festival and held in large natural pools/enclosures within dense mangrove stands until the morning of the 4th. It has been a standard practice to catch as many turtles as possible for this event and to challenge maternal cousins to catch one as large or larger than the challenger has caught. This competition in fact continues throughout the year, and while promoting excellence in turtle capturing, it no doubt increases the number of turtles caught annually.

As turtle hunting and consumption, particularly at New Yam, is a well entrenched custom in the Maskelynes, and Pescarus is the largest village, convincing the residents of Pescarus has been challenging since starting turtle awareness in 1995. This was the original role of the TMs along with tagging turtles and monitoring nesting areas. When nests are found, the TM marks it with a taboo leaf, the *namele*, to indicate that the traditional law of the chief protects the nest.

Since 2001, the VTRMs began to work more regularly in assisting with the management of other resources. This has mainly been with reef resources important to this area, either commercially or for subsistence. These include trochus and green snail, beche-de-mer, giant clams and octopus. Now they also monitor the coastal flora and fauna and encourage their management as well.

The VTRMs endeavour to include turtle tagging as part of the program at New Yam. They try to have each village tag 3 turtles, choosing the smallest ones caught, to release them at this time.

Turtle Management

The taboo on eating eggs is now well respected by most people. There has not really been a taboo *per se* on harvesting turtles, but the Chief and VTRMs regulate the numbers eaten. This is done by restricting turtle consumption to special occasions such as fundraisers (to raise money for school fees, for example), as compensation to workers for performing communal work and as part of the New Yam Festival.

Despite the ongoing efforts of the TMs throughout the Maskelynes, it has taken some time for the people there to embrace the new attitude of not killing and eating turtles whenever the opportunity has arisen. It has been a slow process to usher in this new attitude, but this is now starting to happen. This is due to the efforts of the VTRMs, in addition to the fact that Maskelyne islanders now clearly recognize that turtles are increasingly more difficult to find for harvesting. They are increasingly concerned that their turtle traditions maybe endangered if they do not manage them more carefully.

According to the VTRMs, in the early 1990s Pescarus village itself would eat about 40 turtles at the New Yam Festival. Throughout the year, they would eat another 2 turtles per month, on average, or another 24 turtles per year. This would make a total of approximately 60 turtles eaten per year by Pescarus. If the other 2 villages of Pelong and Lutas, being smaller villages, would consume approximately 40 turtles per year including for New Yam, this would bring the total number of turtles consumed annually in the 3 main villages of Maskelynes to 140 turtles per year. These estimates agree with the figures volunteered by the VTRMs and village leaders at the WSB-VTRM Turtle Workshop during February 2004. They indicated that all 6 villages in the area prior to 1990 would eat around 200 turtles just at New Yam. Throughout the 1990s this figure continued to decline to about 100. Since 2000, it has continued to drop with 95 eaten in 2001 and 81 in 2003.

With the efforts of the VTRMs, in 2001, the 3 villages of Uliveo stopped eating turtle throughout the year and only ate them as part of the new yam festival. This was the policy for 2002 as well, although it is quite likely that during these 2 years turtles were still eaten by some people, and that they were occasionally eaten as part of fundraisers or as payment for communal work. But the transition towards reducing turtle consumption for management purposes had begun. The three communities had also considered the idea of

alternating years of eating turtles at New Yam and the following year, substituting other forms of meat. However, the elders of the villages cautioned the youth not to lose their custom, and opposed the idea of abstaining in alternate years.

The fact that the period when the greatest number of turtles is eaten in the Maskelynes coincides with turtle nesting season is of considerable concern to their management. The placement of the New Yam Festival annually on February 4th is presumably a recent innovation as it is now fixed to the Gregorian calender introduced by Europeans. Elders of Pescarus reported that their ancestors had in fact used the open star cluster Plieades to indicate the time of the New Yam Festival, as is done in many parts of Vanuatu (Hickey 2006) and the Pacific. This timing places the Yam Festival in late March, early April and would have therefore been at the end of the turtle-nesting season and would not have impacted turtles during this vulnerable period. Opening the nearshore areas for harvesting after New Yam in early April is found in many other islands of Vanuatu and was part of the annual summer nearshore closure that coincided with spawning peaks of most finfish and invertebrates and nesting periods for turtles (Hickey 2006).

Status of Turtles

There are still nesting beaches in the Maskelynes, although their number has declined over the last 15 years or so. Turtles would formerly nest on Sakao, Uliveo on the point past Lutas, Varo Islet off Hokai and Pakatel off Avok but now only rarely do. Turtles now continue to nest on Vulai Island (9-10 in 03/04), Awei Island (2 in 03/04), 2 beaches on mainland Malekula west of Hokai (6 nests in 03/04) and Lemenmang Islet (innermost islet west of Hokai) (3 nests in 02/02). Turtles may still occasionally nest on Sakao, although it is uninhabited, it gets daily visits to copra and garden plantations.

The Hawksbill turtle is the main turtle nesting in the Maskelyne area. Many residents reported that they had never seen a green turtle nesting, only hawksbills.

The Maskelynes area remains rich with both coral reef and seagrass beds as well as with mangroves. Residents indicate that both species of turtle will eat the soft tips of stilt roots of *Rhizophora spp.*, as well as their floating propagules.

Turtle Traditions

As already indicated there is a strong custom of eating turtle at the New Yam Festival. This also takes the form of a challenge to others, by a fisher presenting the heart of the turtle caught to his maternal cousin in the form a challenge. He must catch and give back the heart of another turtle of equal or greater size to satisfy the challenge. If he takes too long to do this, then he will be reminded of his obligation. This system would appear to contribute to the high number of turtles caught in the Maskelynes.

Before leaving for a turtle hunting party, it is taboo for others to ask where one is going, or to participate if your wife is pregnant. It is also taboo to call out or make noise when leaving for, or when turtle hunting. A traditional song is used upon returning to indicate when a man who has never caught a turtle before has caught his first turtle and another song is used to indicate the number of turtles caught on the expedition as it returns.

It is also taboo for women to cut the turtles (or men with pregnant wives) upon their return to the village. It is also taboo to go to the yam gardens for a day or two after eating turtle meat or eggs, or ones yams will be adversely affected.

Additional Issues

As of the Turtle Workshop held in February 2004, there was agreement amongst the Maskelyne Council of Chiefs that some new management measures were necessary to ensure an adequate population of turtles in their area. They agreed to

1) Not eat turtle throughout the year until the New Yam Festival
2) to a quota per village as follows (quota based on number of clans/village thus larger villages have higher quotas)

Pescarus	24
Pelong	12
Lutas	12
Avok	9
Neranium	8
Hokai	8
TOTAL	**73**

Also agreed at this meeting was that if any turtles were taken outside of New Yam season, then these would be deducted from the annual village quota. Any unused turtles from the quota could not be carried forward to another year. The fine for harvesting turtles outside of the yam season is 5000 VT. The fine for going over the quota is also 5000 VT. A fine for taking undersized turtles was also set at 5000 VT, although what constituted undersize was not specified, and would presumably vary by species.

The general sentiment in the Maskelynes is that smaller turtles should not be harvested. However, at least some in the scientific community now suggests that harvesting only large individuals, in fact reduces the breeding population, while harvesting smaller ones has less of an effect on the breeding population. They recommend leaving the existing reproductive population and so it is actually better to take the smaller males (Donna Kwan, pers. comm.) This message should be discussed with the Maskelyne communities to get their feedback on this approach.

CONCLUSION

The VTRM Program has had a significant impact on efforts to sustainably manage the turtle resources of Vanuatu. Estimates from this report indicate that amongst the 5 villages of north Efate surveyed, this program has helped to conserve an estimated 120 turtles per year. Over the 10 years since the program began, this would total some 1200 turtles. Through promoting awareness regarding the national legislation protecting dugongs, this survey also indicates a significant decrease in opportunistic consumption of these endangered marine mammals. With over 150 villages with VTRMs spread throughout Vanuatu currently, the benefits of this program are increasing distributed throughout the country.

Since 2001 when the Vanua-tai program expanded to include a broader range of natural resources, they have also had an increasingly significant influence on the management of other important natural resources including those used for commercial purposes (Hickey and Johannes 2002, Johannes and Hickey 2004).

Working closely with village leaders within the traditionally-derived system of village-based resource management, this has been clearly shown for resources like dugongs, beche-de-mer, as well as finfish and shellfish resources. Acting as a conduit from the Capitol to the rural villages of Vanuatu, the VTRM program increasingly provides timely awareness regarding global, regional and national environmental issues from climate change to the threatened status of marine turtles to the grass roots of Vanuatu. They have also provided considerable awareness regarding the impacts of destructive fishing practices, and new fisheries such as the live reef fish and aquarium trade. Their voluntary work in their own vernacular languages within their villages has been timely with the continued population growth and emergence into the cash economy observed in Vanuatu. This program serves as a positive example to the rest of the region of an impressive level of commitment of individuals to the sustainable management of resources under indigenous tenure, and the power of culturally appropriate awareness by a local NGO.

Although the program has experienced an impressive degree of success, as evidenced by the increase in villages implementing taboos associated with turtle and turtle egg consumption (*op cited*), some areas of Vanuatu are still not represented by VTRMs. These communities often continue to indiscriminately consume turtles and their eggs, including the critically endangered leatherback turtle. It is for this reasons that long-term funding for the program needs to be sourced to support and expand this program as soon as possible.

The reasons for the success of the WSB turtle play and VTRM program are summarized below.

Summary of why the turtle play & monitor program has had such a positive impact on village-based turtle management

1) Most villagers had personally witnessed the noticeable decline in turtle numbers within their lifetime. Thus villagers were already aware of the need to initiate management measures for turtles.

2) Turtles featured prominently in the traditions and sustenance of many villages and were thus considered important to conserve for the benefit of future generations.

3) Most villagers and their leaders felt a strong commitment to the preservation of their natural environment for the benefit of future generations, including turtles.

4) A significant time spent by the WSB actors undertaking informal research into the role of turtles in village and customary life, the knowledge held by villagers regarding turtles and their lifecycle and how people felt about turtles as well as other issues concerning turtles villagers felt were important. Many of the actors undertaking the village-based research were from north Efate or had good rapport with these villages from working previously in this area.

5) Based on the research performed in villages, the play was developed and taken back to the same villages, after which extensive discussions ensued offering the opportunity for villager's to clarify and expand on their new knowledge gained from the play. This was therefore a highly interactive process based on a two-way flow of information between WSB and all members of the community including men, women and children.

6) The play, while providing some light-hearted entertainment, also offered valuable, educational insights and cooperative management awareness regarding aspects of the turtles lifecycle that villager's were formerly unaware of. Lifecycle information, particularly the time taken for turtles to become sexually mature, the extent of their migrations as well as the myriad of hazards befalling turtles made a dramatic impact on villager's appreciation of the plight of the turtle. Moreover, this information was presented from the turtles perspective (a turtle hunter in the play was transformed into a turtle who then personally faced these hazards) thereby creating a palpable empathy between the turtles and the audience and avoiding a preachy, relating of facts approach to awareness. The turtle play dramatically affected the way people now thought about turtles.

7) The play concentrated on improving the management of a single species. With the positive effects of this program becoming observable after ten years, it is now much easier to introduce more holistic management concepts of reef and coastal zone management.

8) The ongoing support provided by WSB to the new network of TM's on north Efate assisted significantly to maintain the enthusiasm and

momentum of village-based turtle management. The annual TM meetings, training in lifecycle and turtle tagging provided and regular village visits were important components of the early WSB support to the program. The close proximity of many of the villages assisted with maintaining the enthusiasm as the TM's could easily network amongst themselves.

9) The establishment of community contact people, who became known as 'Turtle Monitors'. These community members, working on a voluntary basis within their own community in their own vernacular language, inherently had important insights into the community's customary values and socio-economic needs regarding turtles and their management.

10) Nearly all TMs worked within, and supported, the existing traditional village organizational structure advising the chief and his council on matters relating to the management of turtles. The TM's thus acted as conduits for the flow of relevant management information from the outside world, via WSB in the Capitol, to the chiefs council in villages with which councils could then make informed management decisions regarding turtles. The adoption and cooperation of chiefs with the initiation of management measures in the form of village-based taboo's held a larger influence than the promotion of Government regulations of turtles. Village chiefs, inspired by the turtle play, then introduced turtle management to the agenda of Island area Council of Chiefs for their consideration. This helped to broaden and strengthen the support for village-based taboos.

11) The tagging program, initiated in 1995, helped to create a sense of ownership of the turtle resource by communities. Tagged turtles would generally never be harvested for this reason. The T-shirts and caps given out freely to fishers who provided turtles (when caught in nets, or found when spearfishing) for tagging and release was an effective, additional incentive to encourage cooperation with the tag and release program.

12) The considerable awareness generated by WSB regarding the Government regulations for turtles contributed to promote a greater understanding of these regulations at the community level. This information had not been disseminated at to any great extent at the village level prior to this program. When chiefs adopted these regulations to monitor and enforce them at the village level, they became effective.

13) Chiefs adopted turtle management measures in consultation with the wishes of their communities. They thus avoided a top-down approach to management but implemented measure in accordance with their peoples' wishes. Compliance with these measures was thereby enhanced through this approach.

14) Ending the play with a song encouraging the audience to join in if they support the theme of conserving turtles and allows the audience to express their support while also indicates the level of support felt by the village back to the actors, creating the sense that the actors and the community were working together towards the same objective.

15) Annual meetings and ongoing training workshops continue to provide recognition, support and encouragement to TMs while broadening management skills.

16) Growing recognition by communities that plentiful resources, especially highly visible ones like turtles, could lead to greater revenue from eco-tourist visitations.

17) Support from SPREP in the form of posters for distribution and use in promoting awareness in villages contributed to its success. Also, expertise and equipment for introducing turtle tagging to villages by the TMs. This was the first time SPREP had introduced tagging equipment to be used by villagers.

18) Ongoing commitment of WSB and the TMs to support turtle management after the ending of the 'Year of the Turtle' in 1995.

19) The introduction of the Turtle Play along with the village-based discussions that became the format for the WSB awareness work also allowed a forum for discussion and awareness raising on other environmental issues important to communities. These included the commercially sold beche-de-mer, where the ecological role of this curious creature was clarified, as well as other reef resources and their ecological interactions. Another important environmental spin-off was the awareness concerning the vulnerability (and Government Regulations) of the commonly found Dugong of north Efate. Very little awareness regarding the status of this animal had ever reached communities prior to this, yet they were opportunistically killed when occasionally stranded or caught in fishers' nets. Awareness efforts on Dugong issues became much more widespread since 2001 with the metamorphosis of the TMs into VTRMs.

RECOMMENDATIONS

1) That WSB seeks long-term funding for its VTRM program, including for expanding the network to areas of Vanuatu not covered to date.
2) That funding includes training for the VTRM in mapping nesting, feeding and resting areas for their respective areas.
3) Also to provide training in turtle species identification to assist with confirming sightings and nesting of rarer species known to occur in Vanuatu such as loggerhead, leatherback and olive ridley. The production of waterproof identification cards for all Pacific species of turtles for distribution to VTRMs would assist considerably towards this.
4) That the tagging program has a national database established to assist in the collation and analyses of the turtle tagging data. This will provide positive feedback to TMs and villagers that their tagging work doesn't go unnoticed (as it has in the past). It will also provide useful data on species, growth rates and migration of turtles frequenting Vanuatu.

5) That the VTRMs continue to access funding to allow them to monitor the nesting season of leatherback turtles at their main nesting sites, as this species is considered to be critically endangered and cannot withstand continued adult and egg mortalities due to local harvesting.
6) That effort is made to intensify the awareness efforts of the VTRM regarding the critically endangered leatherback turtle in the western Pacific.

That the VTRM program continues to work closely with community leaders to support village-based management of resources and to support and re-enforce the traditional systems already found throughout Vanuatu in order to further strengthen them. This is preferable to introducing western models from industrial countries lacking traditional tenure systems and that often ignores the socio-cultural and subsistence links with resources and found in the Pacific.

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Annex 1: Vanuatu's National Turtle Legislation

Earlier Fisheries Regulations Order No. 49 of 1983 states;

No person shall

i) disturb, take, have in his possession, sell or purchase any turtle eggs;
ii) interfere with any turtle nest; or
sell purchase or export any turtle or the shell thereof of the species *Eretmochelys imbricate*, known as the hawksbill turtle;

The following new regulations (Fisheries Act No. 55 of 2005) pertaining to Marine turtles were passed and gazetted in October 2005. The above regulations were repealed. As of 2006, however, these new regulations have not been promoted widely to the public.

38. Marine Turtles

(1) A person must not:

(a) take, kill, have in his or her possession, export, sell or purchase any turtles of the species Dermocheyles Coriacea known as leather back turtle; or

(b) take, have in his or her possession, sell, purchase or export any shell of the species referred to in paragraph (a); or

(c) interfere with or disturb in any way a turtle nest or any turtle that is in the process of laying eggs; or

(d) take, have in his or her possession, export, sell or purchase any turtle egg; or

(e) use any weapon to harm, capture, kill or destroy any turtle species.

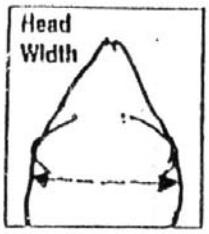
(2) Despite subclause (1), a person may apply to the Director for an exemption from all or any of the provisions under subclause (1) for the purposes of carrying out a customary practice.

International Conventions

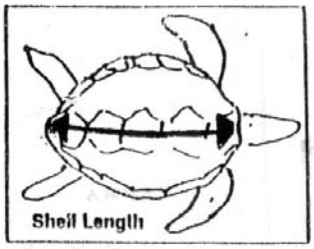
Vanuatu is party to Convention on International Trade of Endangered Species (CITES) as of 15/10/89. The convention prohibits trade or export in any turtle products.

Annex 2: Turtle tagging form used by VTRMs in Vanuatu

This form was given to all monitors to return to SPREP when turtles were tagged



VANUATU TOTEL (FONU)



Sapos yu luk wan Totel, pls fulumap pepa la; sapos yu finem wan totel samples, yu putum wan ring long raet ansa.

Wanem basis long wanem area. ..... Wanem Aelan: .....

Makem long map blong yu raet ples we yu faenem totel long hem: .....

Wanem det? ..... Wanem kaen: .....

Mesurem longfala blong totel: ..... Mesurem hed blong hem: .....

Sais blong totel: Smol, Medel, Bigfala.

Totel I stap mekem wanem: Spel, fas long net, swim, wetem man totel, putum egg, or nara samting

.....

Yu ting se I gat tag mak long totel? Yes No

Sapos I kat mak long hem, nambe long lef hed ..... no long raet .....

Back saed blong Tag Mak, wanem adres I stap long hem? .....

Yu putum mak (tag) long totel? Yes No

Sapos yes, wanem nao namba blong tag or mark? Lef han: .....

Raet han: .....

Totel I laef o hemi ded? .....

Yu putum totel I go bak long solwota? Yes No

Sapos no, wanem I happen long totel?

Kakae, Karem go fitim, Enl narafala samting .....

Sapos yu gat wan tingting we yu wantem talemaot : .....

.....

.....

Nem blong yu: .....

Adres blong yu: .....

Yu save sendem form I kam long :
Wan Smolbag Haos, PO Box 1024, Vila
o
Fisheries Dept., Vila.

ANNEX 3 – Individual TM Survey Results

Efate TM Interviews

Tanoliu

Tanoliu village started in 1972 and is a composite of three nasaras (clans). According to oral history, the original inhabitants of the area had all died out around contact time and a remaining woman and 4 children were taken in by a Moso chief. As their population grew they moved back to the site in 1972. One group within the village has just leased a large track of land to an expatriate rancher who has put up a fence and is converting garden and resource areas (e.g. Kasis trees cut to sell for firewood) to grazing area. Prior to this, the coastal area east of the village had already been leased to resort/sub-division developers which included Samoa Point. The available land around the village of Tanoliu has now been reduced to a small triangle around the village. The leasing of land by different village factions has created considerable divisions within the community which adds challenges to village-based resource management. The number of households in Tanoliu at the time of the 1999 Census was 31.

TM Monitor and Roles

1 TM - Donald James

Donald James started work as a TM in 1995 with the inception of the Program. The scope of the work at that time was restricted specifically to turtles and included community awareness regarding turtle management and turtle tagging. As north Efate was easily accessible to Port Vila by road, many beche-de-mer and AT operators visited them to purchase their marine resources. With the broadening of issues covered at WSB meetings and workshops, their roles broadened to cover these issues as well. This trend continued and now includes collaborating with and advising village leaders on environmental issues. This was in line with the AGM meeting in 2001 whereby their roles were officially broadened and their name changed to Vanua-tai Resource Monitors. Donald has become a very active VTRM and has been involved extensively in introducing the VTRM Program to new areas of Vanuatu as well as participating in turtle nesting monitoring and has attended overseas conferences.

As of April 2003 the nearshore reef in front of the village is under taboo for all marine resources including turtles. This is a continual closure, as the reef had been significantly impacted by gleaning, giant clam extraction for the AT and also earthquake damage in January 2003 resulting in significant coral destruction and u/w landslides.

Between 1998 and 2003, a total of 15 turtles were tagged in the Tanoliu area; 13 were Hawksbill and 2 were Green turtles. Villagers are no longer motivated

to catch turtles for tagging as it is ‘hard work’ and initially they were rewarded with a t-shirt or caps, which is no longer the case. No overseas tags recovered but one small turtle tagged at nearby Tranquillity Resort on Moso Island was recovered.

Turtle Management

As noted above, the fringing reef area in front of village is taboo to all resources indefinitely. It is not a good turtle feeding or nesting habitat however. Otherwise, the chief has declared that it is taboo to eat turtles without prior consultation with him.

Respect for local taboos has been difficult, including turtle taboo as community has been divided between rival factions. Another group put a taboo on killing the wild horses in the bush, so they reached a mutual agreement to respect each others taboo this way. Since reaching this agreement, the taboo is now relatively well respected. This is in part because, according to the TM, they were never particularly dependent on turtles as a source of meat. It was also never a local custom to eat turtles in this area, so dependence on that resource is not high. They also have no nesting area within their immediate territory.

In the 1970’s when the village was small and the turtles more abundant, some people would hunt turtle from canoes at night using a Coleman light and heavy barbed metal spear. They would also go to Moso Island where there are turtle areas on the north side of the island and harvest nesting turtles and their eggs.

By 1995, it was estimated that the village would only consume 5 turtles per year due, in part to a decline in the resource, but also due to no strong tradition of doing so. However, being so accessible to the Capital meant that friends (often foreign nationals) from Vila would come to harvest them for special occasions.

The two types of turtles formerly eaten in this area were the Hawksbill and Green turtles. There was no particular time associated with turtle harvests. Since 1996 with the efforts of the TM, turtles are now taboo and are no longer eaten in this area.

Status of turtles

There are no current nesting beaches within Tanoliu area, but Samoa point would have possibly been one in the past (prior to missionary occupation last centaury- it is named after the Samoan missionaries established there). As the road built during WW II parallels the coast in this area, whatever nesting beaches that did exist would have been disused for some time given the road traffic.

There is very little seagrass habitat in this area except for a limited amount at Samoa Point. The fringe reef in front of the village, once said to be healthy

with plenty of live coral only 20 years ago, is now severely impacted as noted above. Nearby, only limited coral reef is found possibly due to low salinity due to rivers, creeks and freshwater springs along the coast. Runoff from upslope road construction, logging and other activities may also have led to sedimentation of reefs in this area. The richest feeding area is around the adjacent island of Moso. Both species of turtle feeding in this area are said to be present throughout the year, and are found to rest, mainly at night, on the fringe reef drop-off in the Tanoliu area.

Turtle harvesting has been taboo since 1996 and turtle numbers have slowly been observed to increase and although it is not a prime feeding or nesting area. They are also observed to be less 'wild' or wary, as a consequence of not being harvested. This phenomena, whereby animals lose there wariness of humans if not attacked by them, may explain their increase in numbers in the area.

Turtle Traditions

As the people of Tanoliu originated from inland villages and migrated to the coast under the influence of missionaries, there is no oral history recording traditional turtle harvests, feasts or other customary practices related to turtles.

The TM indicates that turtles were not traditionally caught in ancient times. However, with the introduction of metals, probably available widely with the American wartime presence, barbed single-point spears were used from a canoe with 2 people. One paddling aft and the other forward with Coleman light and spear. As they approached the turtle would be attracted to the light and the spear would be dispatched with enough force to break through the carapace and plastron; the turtle being hooked by the barb.

Traditional management of turtles in this area includes that 'If you eat turtle eggs then you can't go to the yam garden or your yams will grow like turtle eggs; small and round.'

Fonu namo - Green turtle (namo = 'place lacking stone' = sandbeach)
Fonu namate – Hawksbill turtle (namate = reef)

Dugong Comments

Dugongs also observed in the area, despite the lack of prime feeding areas. One older man indicated he had witnessed two dugongs mating in the shallows.

Additional Issues

Divided factions within the village create new challenges in resource management.

Donald has been instrumental in initiating a cultural/ecotourism project in 1998 in an ancient village site behind their village where all resource harvesting is now taboo. They have long term plans to provide tours to tourists of the old village site to interpret their use of their natural resources and their cultural practices and traditions. Through this process they hope to protect the environment of the area, revive and transmit traditional dances and songs while generating revenue for their cash needs.

Mangaliliu Village

Mangaliliu village started around Independence with the return of people from Lelepa Island to the mainland due to a growing population on Lelepa. They are therefore all family with Lelepa islanders and share much of the same fishing grounds.

Turtle Monitors & Roles

Vatunmanu Billy – started in 1995 (Josef Kaloran also started in 1995 and worked as a TM until 1997)
Matai Elo Kalsong started in 2001 as a TM.

Starting in 1995 the main emphasis of the TMs has been turtle tagging and promoting community awareness of turtle management. This was mainly in the form of explaining the turtle lifecycle to the community as well as tagging turtles. They would also monitor turtle consumption in the village as well as work with the chief towards introducing a taboo on turtle consumption. Initially their work was only related to turtle conservation.

As some early workshops included fisheries, forestry and environment representatives the TM's started also giving additional awareness information to communities especially regarding forestry issues, trochus, following the communities needs. In 2001, they officially decided to change their name to Vanua-Tai to reflect these changes. It was essentially an organic process driven by community needs.

Tagging program started in 1995 and V. Billy has tagged about 30 turtles and submitted the data to WSB (WSB database records 7 Hawksbills tagged between 1998 & 2002). Initially there was an incentive for villagers who had caught turtles in fishing nets to bring the turtle to the TM for tagging, and this incentive worked well. Some boys reported seeing an unidentified turtle nesting on Hat Island in November 2003, during the day, and observed a tag saying "SW Australia" on it. This is the only overseas tag reported.

Turtle Management

The fringing reef area in front of village is taboo for everything except hook and line fishing, so turtles are also taboo in this area (see Figure 1). This was initiated in about 1997 by the chief due to concerns of marine resource over harvesting close to the village. An additional reason for choosing this area is that it is also easily monitored as it is in plain view of the village. The chief

sometimes opens this area at his discretion to utilize the resources, for example over Christmas or some other special occasion, but turtles remain taboo. Otherwise the TMs, along with their leaders have put a taboo on the harvesting of turtles, and the taking of eggs in the area under Mangaliliu tenure, until they agree that the turtle population has recovered sufficiently.

There are some young villagers who do not respect the turtle taboo. The TM has enumerated a total of 6 turtles poached since 1996, when the turtle taboo was put in place. The turtle egg law is also promoted at public places like the church and is reportedly well respected. However, people from Tanna, who have a village behind Mele on top of the hill above Mangaliliu, reportedly sometimes poach eggs and adult turtles from the waterfall area adjacent to Hat Island where there are no people living and therefore is difficult to monitor. It has proven difficult for the chief of Mangaliliu to enforce the taboo with outsiders.

The taboo on taking turtles and eggs began with the awareness efforts of TMs since 1995/96. Before the TMs efforts, turtles, primarily Hawksbill, feeding, resting or nesting and turtle eggs were open targets to opportunistic harvesting. The previous generation, when turtles and nesting areas were more plentiful, would also take canoes to the seaward side of adjacent Moso Island to harvest eggs during the nesting season. They would also hunt the adults from canoe burning either coconut fronds, bamboo or Coleman lamps as a light source and spearing turtles at night with a barbed spear tethered to a float. More recently with the popularity of snorkelling gear, spearing or holding turtles at night while they sleep was practiced, as these places became known when spearfishing at night. By 1995, the TM reports that turtle numbers had dwindled to the point where they were rarely eaten, mainly because they were so hard to find. The observable decline of turtle resources meant the community was more receptive to the conservation efforts of WSB.

With the effect of the almost 10 year taboo, turtles are now much more frequently seen to the point where some community members are starting to put pressure on the chief to open turtles to harvest once again. It seems the TM's are becoming a victim of their own success in this area.

Status of turtles

It is said that formerly there nesting beaches also to the east of the village, but much of this coastal land has recently been leased and developed for expatriate housing. Most of the nesting activity in this area now occurs on the beaches west of the village. It is difficult to monitor nesting activity on the numerous beaches from the village westward to Tuk Tuk due to their isolation as Mangaliliu is the last village along this section of coast. The offshore and uninhabited Hat Island (Eratoka) also has some nesting beaches, mainly on the more rugged west side of the island. Two unidentified turtles were observed nesting on the west side of Hat in November 2003, where there are some beach areas intermixed with a rocky shore with sandy areas upslope. One of these turtles was reported to have a tag saying 'SW Australia' on it.

The TMs are not sure which species are nesting in their area, as they have never directly observed them.

Nesting season is said to be mainly from September to October, with some occurring in November. This season (Sept-Nov./03) 3 nests between Mangaliliu and Tuk Tuk, and 2 nests on Hat Island had been enumerated. Billy also reports that his parents had seen turtles mating but he never had, this probably reflecting the decline in resource between generations.

Limited hard data on the number of nesting turtles, eggs or hatchlings has been collected due to the isolation of the nesting beaches.

Regarding feeding areas, the mainland has very little seagrass beds as it is primarily fringing reef. Hawksbills are observed regularly feeding on the reefs of this area. There are some seagrass beds on Lelepa in the area from the primary school eastward to the bay at the eastward point and green turtles may be feeding there.

No obvious seasonality of turtles noted in Mangaliliu waters, they appear to be present all year round. The main species present are Hawksbill, with some Greens, and he reckons he has seen about 4 Leatherback migrating by over the years.

Dugong Comments

Not many dugongs resident in this area due to the lack of appropriate feeding habitat.

Turtle Traditions

It is unclear from oral history whether the people of Mangaliliu hunted turtles from canoes capturing them by hand as was practiced in other areas of Vanuatu. However, since European contact they were harvested with iron tipped spears from canoes as well as harvesting nests and nesting turtles, mainly on Moso Island.

No annual customary celebrations are associated with turtle consumption, nor are there any traditional songs or stories associated with turtles from this area as recalled by Billy.

The only traditional management practice recalled by Billy is that it is taboo for pregnant women to eat turtles or eggs as this will result in the child being born with turtle like eyes.

Additional Issues

The TMs note how beneficial it would be if Mangaliliu were to host a Vanua-tai workshop in order to raise the profile of their work and thus improve support. A ‘Turtle Management’ video was also mentioned as being a good tool to support their awareness efforts on an ongoing basis within the village.

They note the value of working with the school children as well as youth groups, who often inform their parents of the issues raised. In some cases, children have stopped their parents from eating turtle eggs (see video).

The TMs stressed the importance of working closely with the village chief in promoting turtle awareness and management. It has been very effective with Matai as a new TM as he is on the village Council of Chief's as well as being active with the youth group.

They expressed the value of having some legislation to back up a turtle taboo, especially for outside transgressors (non-Mangaliliu villagers) as compliance is generally good amongst villagers. However, they note the limitations in having legislation enforced by central authorities and would prefer to have the authority themselves.

Both feel strongly committed to their work in managing natural resources so as to protect their children's futures. They also note their reliance on their resources to earn cash for modern needs and believe that Ecotourism is an appropriate avenue for this, as if managed properly, is more sustainable than resource extraction.

Emua Village

Emua village is a moderate sized village of 35 households situated on a long beach with a reasonable sized fringe reef. It is said to be an original coastal village site, although at one point the population moved to Kagula Island at the urging of the missionary, but with high mortalities there, they returned to their present village site.

Turtle Monitors and Roles

Chief Albert Manlaesinu – started in 1998 after replacing George Kaltap
Assistant Chief Ben Manlae uri sari – started in 1995

After the WSB play the two TMs began their turtle awareness working closely with the village Council of Chiefs. The Council then initiated a 10 year taboo on the taking of turtles or their eggs in 1995 in response to this awareness. The TMs also worked closely with fishers to tag any turtles found on the reef or caught in nets and returned them safely to the reefs.

Their roles gradually changed with the needs of the village in addressing issues like over harvesting beche-de-mer, trochus, and green snails. Since 2001 when they officially changed their role and name to Vanua-tai this trend has continued. With Ben taking his Assistant Chief title in 2002 and Albert taking village Chief title in 2003, their work, and the respect for their taboos has continued to become stronger. They have placed the "No kaikai momma totel" signboard in their village.

Assistant Chief Ben has tagged 27 turtles between 1998 and 2003, 11 being green turtles and 16 Hawksbills (from WSB database). These turtles are brought to them by fishers who find them resting on the reef or caught in nets. They submit their turtle tagging data to WSB. Two turtles tagged already had tags on them although their numbers or addresses where not recorded as they were the tags they themselves had applied??? The TM noted however that with one of them, it was the same turtle he had tagged and noted that it had grown 4-5 inches over approximately one year.

Turtle Management

It is taboo to harvest turtles and their eggs in the entire area under Emua tenure. The taboo has been very well respected in this area, both by villagers and outsiders. This taboo is the only turtle management measure put in place and has been implemented through the awareness of the TMs in 1995. In 2003 a 4 year taboo was placed on an approximately 250-m area of reef directly in front of the village for all resources. This is due to the impact of heavily fishing this area for many years.

Prior to 1995 turtle consumption was unrestrained and occurred at every opportunity. This was mainly when they were encountered resting on the reef while diving for fish (especially at night) as well as when they were caught in gillnets set over the reefs and seagrass beds. Turtle was mainly used as 'Sunday meat' that is for the family meal prepared and eaten after church services and shared by the community. The TMs estimate that prior to 1995, they would eat 2-3 turtles every second Sunday. Taking an average of 2.5/every 2nd week would give on average 5 turtles consumed every month. This would amount to about 60 over the year. Over 10 years this would total 600 turtles. They report that since 1995, only 5 turtles have been eaten in Emua with the taboo in effect

The TMs report that two other factors have contributed to the willingness of Emua villagers to comply with the turtle eating taboo. Villagers now report that they have lost their taste for turtle meat, and that they felt a lack of energy after eating one in 1997. They had also heard of some deaths in the Solomon Islands from eating turtle, and this has also contributed to less interest in turtle meat.

As there has been no nesting in their area since the 1960s, there have been no turtle eggs to harvest during this period. However, nesting has since resumed with the implementation of the taboo, as discussed below.

The turtle species commonly found in their waters are the Green and Hawksbill, and these were the species formerly eaten prior to the taboo. There was formerly no special ceremony or season to eat turtles. They would also formerly harvest turtles from nearby Kagula and Paonangisu waters.

The methods formerly used to catch turtles in the 1960s and 1970s were to use a bright light at night from canoes to attract turtles found feeding over the

reef and seagrass beds so they could be impaled with an barbed iron tip spear. In the 1980s spearguns became more popular and were used to shoot resting turtles found on the reef, especially at night. The spear could be attached to a line and float to tire and retrieve the turtle. This method was obviously more effective and contributed to the decline in turtle numbers.

Status of Turtles

The TMs report that both species of turtle found in their area are sighted much more frequently now, and that the turtles are much less wary of humans.

Turtle nesting on the long beach in the village area ceased in the 1960s. However, on August 19, 2002, the first turtle (SPECIES?) in about 40 years returned to nest unobserved at night at an old bush toilet site! The TMs built a small fence around the nest to protect it from predators and continued to monitor it. The TMs report that 78 days later on November 6, 130 hatchlings emerged. They were collected and released outside of the reef from a canoe, on the advice that the greatest hatchling mortality occurred during the journey to open water.

Less than a month later on September 9th at approximately 1:30 AM a large green turtle was found nesting some 58-m from the sea. A nearby resident returning home about this time related how they heard noises and was hit by stones from something nearby. In fact the stones were hurled by the turtle digging her nest. The man hurried into his house and swore at it to leave him alone from inside! This turtle ended up nesting at the base of a burnt mango tree stump. This nest later yielded 134 hatchlings that were also released outside of the reef from a canoe.

The return of nesting turtles to their village area after some 40 years was an affirmation that the turtle harvesting taboo, then into its 7th year was effective and that turtles would return to nest in their village area.

Dugongs

The TMs report that Dugongs were opportunistically harvested by villages in this area for some years by spearing them or when caught in their fishing nests. They would catch 1 to 2 Dugongs per year. There are now an estimated 9 -10 living in the Emua area that come to feed over seagrass beds on night time high tides. They seem to be territorial about there feeding areas and use the deeper areas over the reef flats to feed. Fishers find they must be careful when deploying gillnets in these areas at night to avoid catching Dugongs, that once entangled, destroy their nets in an effort to escape. In the daytime the Dugongs are found out in deepwater off the village.

In 2002 they sold a calf to a local resort development to be held as an attraction. The mother reportedly stayed nearby and called (sounding like a cow) off the reef for some days after this. Fisheries intervened and did some awareness work regarding marine mammal regulations and the TMs have

continued with this awareness. Consequently, Dugongs are no longer consumed or sold in this area.

Turtle Traditions

The TMs report that to their knowledge there were never any special ceremonial feasts, customs or totems associated with turtles in their area. Traditional management of turtles in this area included that it was taboo for a pregnant woman to eat turtle and that it was taboo to go to any garden after consuming turtle. This taboo could be removed however by making a small 'gammon' garden distant from the real one.

Additional Issues

The people of Emua have also been welcoming the opportunity to generate revenue from tourism and have opened 2 guesthouses as well as welcoming yachts to visit by placing a permanent mooring for them.

Paonangisu Village

A relatively large village of 105 households located on a long white beach surrounded by a range of rich marine habitats including mangroves, seagrass beds, extensive fringe reefs and an offshore island (Kagula).

Paonangisu village includes people from other islands that came to work on nearby plantations. This, along with long-term leadership dispute within the village has added additional challenges to village-based resource management as these factors often lead to reduced respect for resource management taboos. The size of the waters held under their tenure also makes it difficult to monitor them.

Turtle Monitors and Roles

Joseph Kaloran – started in 1995

Tourakoto Taripu – started in 1995

The TMs original roles where to promote turtle management in the form of raising awareness of the turtles lifecycle, natural hazards as well as tagging turtles. This gradually evolved to include other issues like beche-de-mer, trochus, dugong and other marine resources as well as logging and reforestation issues due to the pressure on these resources.

The 2 TMs have tagged about 25 turtles and forward their data sheets to WSB (the WSB database shows 3 hawksbills between 2000 and 2002). They have never recovered any tags from overseas.

Turtle Management

There has been a taboo on the harvesting of turtles and their eggs since 1995. The exception to this is when the village leaders allow for the capture of turtles for a special occasion. This is a way of boosting compliance with the taboo in that villagers get the benefit of managing their resources well. However, given the mixed nature of the village and the long standing leadership dispute, the TMs report that some poaching by their villagers occurs. Also, they believe some neighbouring villages also poach in their waters as well as people from the Capital. These are often people from this village, or their in-laws, who reside in Vila and dive for turtles at night. They estimate that approximately 20 turtles are poached annually from their waters, mostly opportunistically caught by night divers or by catching them in fishing nets.

The only additional turtle management measure, along with the taboo on turtle harvests, is a taboo on the harvesting of eggs. Both of these taboos are recent (1995) since the awareness efforts of WSB.

The TMs report that prior to 1995, they would eat 2 turtles per week as a source of meat for Sundays on average of twice a month. This would total 4 turtles per month and 48 turtles per year.

Since the taboo has been initiated, they have eaten only eat 2- turtles per year when celebrating their annual New Yam Ceremony. They indicate that this is a relatively recent custom; the chief notes that as a child they always ate fish with New Yam. The request to harvest turtles for this ceremony comes from the community and the decision is made by the chief in consultation with the TMs.

The turtles eaten in this area are both Green and Hawksbill turtles.

Status of Turtles

There has never been a record of turtles nesting on the beaches of their village site. The main nesting area in this area is on the island of Kagula where nesting resumed in 2002, after ceasing long ago. It is said that this island was formerly called Turtle Island, and was the sight of the first mission in the area. In this first season of 2002/03, 6 nests were found in Dec/Jan. In the following season of 2003/04, 8 nests were found in the same months. The 2 main nesting beaches on the island are at the sand beach towards the village (2 nests in 2003/04, and the other on the opposite side towards Pele Island (6 nests in 03/04). The TMs believe they were Green turtle nests due to the size of the tracks left. The hatchlings were not seen. The concern is that with the recent development of a resort on this small island that turtle nesting will be less likely unless great care is exercised by the resort developers.

In addition to the nearby fringing reefs for Hawksbill feeding, the extensive reef flat surrounding Kagula has seagrass beds for Green turtles. As well, there are 2 lagoons on the mainland with seagrass beds where they also feed.

The number of turtles sighted in this area has continued to increase since the placing of the taboo in 1995. The increase has been significant enough that villagers sometimes query when the taboo will be lifted. The TMs continue to promote awareness of the late sexual maturity of turtles and the need to prolong the taboo. They also highlight that globally, turtles remain threatened.

Dugongs

The seagrass beds of this area are also utilized by numerous Dugongs of this area. The TMs estimate that there are over 20 dugongs in this area. They were apparently hunted for ceremonial purposes in the past according to Chambers et al (1989), but the TMs had no recollection of this. They stated however that they would opportunistically take them when left drying on the tide or caught in fishing nets. They estimate that they would have eaten on average 1 Dugong a year prior to year 2001. After this time, the TMs began to promote awareness of the Fisheries Regulations and since then they have not eaten Dugongs

Turtle Traditions

The TMs explained that prior to the widespread distribution of snorkelling gear, turtles were harvested from canoes with the use of lights and a heavy barbed spear. There was one old man who was a specialist at this. Later, with the widespread use of diving gear, turtles would be caught when found resting on the reef, especially when diving at night. They would also be taken when caught in fishing nets.

The TMs said that most of their old traditions had been lost long before. However, they recalled that it was taboo for people with Asthma (‘short wind’) to eat turtle meat.

There was no recollection of any particular custom, or ceremony when turtles would be traditionally consumed.

The vernacular term for turtle is Fonu. Hawksbill turtle is known as Fonu namati (=reef) whereas Green turtle are Fontao (tao means to ‘cover up’ and is taken as covering up a nest). This would imply that this is the main species nesting in this area.

Additional Issues

This area is also rich with fish and that is their main source of meat. They also raise some cows that can be used for communal feasts such as at marriages or funerals. These alternatives along with the fact that villagers had themselves seen the decline in turtle numbers have helped to assist with the turtle taboo.

The TMs still see people using destructive fishing practices and the taking of small resources such as shells, fish, etc., and with the size of their tenured

waters it is difficult to monitor. They see the continued need for promoting awareness of sustainable fishing practices, and believe that a video would be useful to assist them in raising awareness of the globally threatened status of turtles.

Takara Village

Takara village started in 1975 when some people from the offshore island of Emau moved to their mainland boat landing. There are now 53 households resident there. There are 2 patch reefs covered in white sand located offshore along with a good sized fringe reef along the mainland. There is a small resort located nearby with hot springs.

Turtle Monitor and Role

Tele Bill – started in 1995

The original role of the TM was to promote awareness of turtle management by re-enforcing to the community the newly acquired information from the WSB turtle play. Turtle tagging was also part of his role. By working with the village leaders, they introduced a taboo on the taking of turtles and their eggs since 1995. On occasions sanctioned by the village leaders, however, turtles could be harvested for special occasions.

Since 2001, the TMs work has broadened to include promoting awareness on a variety of resource management issues including the sustainable harvesting pf beche-de-mer and trochus.

The TM has tagged over 40 turtles since 1995. The WSB database shows 7 Green and 1 Hawksbill turtles tagged between 1999 and 2003. One of the Green turtles had a SPREP tag on it. All data sheets are submitted to WSB.

Turtle Management

There is a taboo on the harvesting of turtles and eggs throughout the area under Takara tenure. However the Chief and TM occasionally sanction the harvest of 1-2 turtles for the community's benefit. This taboo is well respected by all except for a group of 4-5 individuals who occasionally poach turtles.

Back in the 1970s when turtles were quite plentiful, they were eaten almost daily, according to the TM. Throughout the 1980s the population declined as did the harvesting rate. By the early 1990s, the TM estimates that on average, 1 turtle was eaten per week, mostly for 'Sunday meat', for fundraisers or other community events. Since the introduction of the taboo in 1995, they eat about 3-4 per year for community festivities. The TM estimates that a further 10-12 turtles are poached annually. Many of these are eaten during Christmas season. The taboo has thus reduced the annual harvest from 52/year to about 15/year. This represents the conservation of about 37 turtles per year, and over 10 years represents 370 turtles.

The main species found in this area is the Green turtle along with the Hawksbill. These are the species eaten. There is no traditional season for eating turtles.

Status of Turtles

The number of nesting beaches has declined over the years in this area. This is considered to be a result of over harvesting nesting females and eggs in the past. In the 1970s and 80s there were many turtles nesting all the way from Port Vatu to Onesua. Now most of the nesting occurs between Takara and Port Vatu. All of the nests observed are of Green turtles.

The TM has enumerated the following number of turtle nests. In 1997 there were 3 nests between Takara and Beachcomber Resort. In 1998, there were 2 east of Takara. . In 2000, there were another 2 east of Takara. In 2001, 1 nested at Takara and 1 at Port Vatu. In 2002 there was 1 at Beachcomber. In 2003, the TM recorded 3 nests at Port Vatu and 2 east of Takara at Nangsun kansiko (Kingfisher Pt.). The number of eggs or hatchlings was not observed.

The fringe reef along the mainland has extensive seagrass beds behind the reef crest. These are the main feeding areas for the Green turtles while the Hawksbill turtles feed along the reef drop-offs as well as on the 2 offshore reefs, *Mangea auta* and *Mangea lo* (largest). Both species of turtle appear to be present throughout the entire year. The number of turtles observed in the area has increased since the initiation of the taboo in 1995.

Dugongs

The seagrass beds of the area also support a population of Dugongs. They come ashore during periods of high tide, day or night, to feed. The TM estimates that there are 2 adults based at the offshore islets of Managea; 1 with a calf at Takara and one between Beachcomber and Port Vatu. This makes for a total of 5 Dugongs in the Takara area.

Residents of Takara would occasionally eat a Dugong when they were found entangled in their fishing nets. Since 2001 and the awareness promoted regarding Dugong regulations, this is no longer the case.

Turtle Traditions

The previous generation would catch turtles while they fed over the reef at night from canoes using lights and an iron tipped barbed spear. This method has given way to catching turtles while they sleep by diving, either day or night, on the reef. They are either physically held or speared with a speargun. Turtles are also harvested when caught in fishing nets as they feed over the reef flats.

The TM reports that it is taboo to go to the yam garden after the consumption of turtle meat. It is also taboo for pregnant women to eat turtle. There is also a kinship group with turtle as its totem, and it is taboo for this group to eat turtle. These beliefs continue to assist in the management of turtles for those who continue to follow these traditional rules.

Additional Issues

The TM is interested in developing a small eco-tourism project at the offshore Mangea reefs where terns are known to nest, and the reefs are rich. He also thinks it would be useful to receive further training in coral reef assessment.

Maskelyne Islands

Pescarus Village – Uliveo Island

Turtle Monitor and Roles

John Leggat – started in 1995; Titua Noguf started in April, 2003 who replaced an earlier TM that chose to retire.

As turtle hunting and consumption, particularly at New Yam is a well entrenched custom in the Maskelynes, and Pescarus is the largest village, convincing the residents of Pescarus has been challenging since starting turtle awareness in 1995. This was the original role of the TMs along with tagging turtles and monitoring nesting areas. When nests are found, the TM marks it with a taboo leaf, the namele, to indicate that the nest is protected by the traditional law of the chief.

Since 2001, the TMs began to work more regularly in assisting with the management of other resources. This has mainly been with reef resources important to this area, either commercially or for subsistence. These include trochus and green snail, beche-de-mer, giant clams and octopus. Now the TMs also monitor the coastal trees and birds and encourage their management as well.

The TMs have tagged a number of turtles and try to include turtle tagging as part of the program at New Yam. They try to have each village tag 3 turtles to release them at this time. (only 2 Hawksbill in WSB database; 6 for Maskelynes with 1 large Green eaten in Feb 2002 at New Yam that had a Brisbane tag on it)

Turtle Management

The taboo on eating eggs is now well respected by most people. There has not really been a taboo on harvesting turtles, but the number eaten are regulated by the Chief and TMs. Turtles are sometimes eaten as part of fundraisers (to raise money for school fees, for example), as compensation to

workers for performing communal work and as part of the New Yam Festival. However the

Despite the ongoing efforts of the TMs throughout the Maskelynes, it has taken some time for the people there to embrace the new attitude of not killing and eating turtles whenever the opportunity has arisen. It has been a slow process to usher in this new attitude, but this is now starting to happen. This is due to the efforts of the TMs, in addition to the fact that Maskelyne islanders now recognize that turtles are increasingly more difficult to find for harvesting. They are concerned that their turtle traditions may become lost if they do not manage them more carefully.

According to the TM, in the early 1990s Pescarus would eat about 40 turtles at the New Yam Festival. Throughout the year, they would eat another 2 turtles per month, on average, or another 24 turtles per year. This would make a total of approximately 60 turtles eaten per year by Pescarus. If the other 2 villages of Pelong and Lutas, being smaller villages, would consume approximately 40 turtles per year including for New Yam, this would bring the total number of turtles consumed annually in the 3 main villages of Maskelynes to 140 turtles per year. These estimates agree with the figures volunteered by the TMs and village leaders at the Turtle Workshop during February 2004. They indicated that all 6 villages in the area prior to 1990 would eat around 200 turtles just at New Yam. Throughout the 1990s this figure continued to decline to about 100. Since 2000, it has continued to drop with 95 eaten in 2001 and 81 in 2003. In 2004, only 26 were eaten by the 3 villages on Uliveo at New Yam; this reduction was due to the decline in the resource.

In 2001, the 3 villages of Uliveo stopped eating turtle throughout the year and only ate them as part of the new yam festival. This was the policy for 2002 as well, although it is quite likely that during these 2 years turtles were still eaten by some people, and that they were occasionally eaten as part of fundraisers or as payment for communal work. But the transition towards reducing turtle consumption for management purposes had begun. The three communities had also considered the idea of alternating years of eating turtles at New Yam and the following year, substituting other forms of meat. However, the elders of the villages cautioned the youth not to lose their custom, and opposed the idea of abstaining in alternate years.

Status of Turtles

There are still nesting beaches in the Maskelynes, although their number has declined over the last 15 years or so. Turtles would formerly nest on Sakao, Uliveo on the point past Lutas, Varo Islet off Hokai and Pakatel off Avok. Now, turtles continue to nest on Vulai Island (9-10 in 03/04), Awei Island (2 in 03/04), 2 beaches on mainland Malekula west of Hokai (6 nests in 03/04) and Lemenmang Islet (innermost islet west of Hokai) (3 nests in 02/02). Turtles may still occasionally nest on Sakao, although it is uninhabited, it gets daily visits to copra and garden plantations.

The Hawksbill turtle is the main turtle nesting in the Maskelyne area. Many residents reported that they had never seen a Green turtle nesting, only Hawksbills.

The area is rich with both coral reef and seagrass beds as well as with mangroves. The residents indicate that all species of turtles will eat the soft tips of stilt roots of *Rhizophora stylosa*, as well as their floating propagules.

Turtle Traditions

As already indicated there is a strong custom of eating turtle at the New Yam Festival. This also takes the form of a challenge to others, by a fisher presenting the heart of the turtle caught to his maternal cousin in the form a challenge. He must catch and give back the heart of another turtle of equal or greater size to satisfy the challenge. If he takes to long to do this, then he will be reminded of his obligation. This system would appear to contribute to the high number of turtles caught in the Maskelynes.

Before leaving for a turtle hunting party, it is taboo for others to ask where one is going, or to participate if your wife is pregnant. It is also taboo to call out or make noise when leaving for or when turtle hunting. A traditional song is sung upon returning to indicate when a man who has never caught a turtle before has caught his first turtle and another song is sung to indicate the number of turtles caught on the expedition.

It is also taboo for women to cut the turtles (or men with pregnant wives) upon their return to the village.

It is taboo to go to the yam gardens for a day or two after eating turtle meat or eggs.

Additional Issue

As of the Turtle Workshop held in February 2004, there was agreement amongst the Maskelyne Council of Chiefs that some new management measures were necessary to ensure an adequate population of turtles in their area. They agreed to

1) Not eat turtle throughout the year until the New Yam Festival
2) A quota per village as follows (quota based on number of nasaras/village)

Pescarus	24
Pelong	12
Lutas	12
Avok	9
Neranium	8
Hokai	8
TOTAL	**73**

Also discussed at this meeting was that if any turtles were taken outside of New Yam season, then these would be deducted from the annual village quota. Any unused turtles from the quota could not be carried forward to another year. The fine for harvesting turtles outside of the yam season is 5000 VT. The fine for going over the quota is also 5000 VT. A fine for taking undersized turtles was also set at 5000 VT, although what constituted undersize was not specified, and would presumably vary by species.

The general sentiment in the Maskelynes is that smaller turtles should not be harvested. However, the scientific community now suggests that harvesting only large individuals, in fact reduces the breeding population, while harvesting smaller ones has less of an effect on the breeding population. They recommend leaving the existing reproductive population and so it is best to take the smaller males (Donna Kwan, pers. comm.) This message should be discussed with the Maskelyne communities to get their feedback on this approach.

Avok

There are 30 households in Avok village from 7 different nasaras (clans), all of whom are dependant on marine resources for their subsistence needs. The residents of Avok originate from inland Malekula and came to this small island when their original villages were impacted by depopulation. They speak a different language to that spoken by the villages on Uliveo.

Turtle Monitors and Roles

TM – Kami Hailip started in 1998 after a WSB Workshop was held in Pelong village, Maskelyne Islands.

His role originally was to promote community awareness of turtle and other environmental issues as well as to tag turtles. The main other issue was to assist his Chief in controlling harvests of undersize trochus and green snail, as these are very important sources of revenue for his village. More recently he has begun awareness specifically targeting women's fisheries to address issues like destructive fishing practices as well as harvesting undersize shellfish, Mud Crabs and fish. He has promoted the idea of only taking only male terrestrial crabs and leaving the females to breed.

The TM has tagged a number of turtles since commencing as a TM, including 6 in 2003 and 3 prior to that and has submitted these data to WSB. The WSB database indicates 2 Hawksbill and 2 Green turtles tagged between 2001 and Feb. 2003. He has not recovered any tags.

Turtle Conservation

There is no turtle taboo area, but since promoting turtle awareness starting in 1998, he and his Chief have introduced a taboo on harvesting turtle eggs. Prior to this, eggs were eaten whenever a nest was found. Since the WSB

Workshop in 2003, the TM has convinced his community not to eat turtle throughout the year, but only to consume turtles as part of their New Yam Festival.

The TM reports that in 1990, his village had eaten 66 turtles at the New Yam Festival. Typically, during these years, they would also eat 3-5 turtles per month throughout the rest of the year. Taking an average of 4 per month, this would give an average of 48 turtles eaten throughout the year plus 66 at New Yam for a total of 114 eaten in 1990. By 2002, the number of turtles eaten at New Yam had dropped to 22 (2 of which were purchased from Lutas village, as they could not catch a sufficient number themselves due to declining turtle numbers). In 2003, the number eaten at New Yam dropped to 11 turtles, again due to a lack of turtles. The quota introduced at the WSB Workshop in February 2004 for Avok to eat at New Yam is now 9 turtles. They also agreed to not eat turtles throughout the rest of the year.

The TM had never heard of any traditional turtle management strategies. Acting on advice from the TM, the community has stopped eating turtle eggs since 1998. The TM reports that the previous generation would regularly sleep behind the nesting beaches waiting for nesting turtles to come ashore at night. The turtles would then be harvested, along with any eggs found. This practice is not so common with the current generation, and has ceased since 1998 with the influence of the TM.

The catch and eat mainly Hawksbill and Green turtle, with a lesser number of Olive Ridley (the identification of this last species needs to be confirmed). This is a reflection of the relative abundance of these various species. The community of Avok catches turtles around Sakao, Vulai (which they claim partial tenure over), and in the full area between Lamap Pt. and Hokai. The other villages of the Maskelynes all opportunistically catch turtles within Avok 1's fishing area, as with the close kinship and marriage ties found amongst these villages, they do not exclude others form fishing in their areas. Canoes from the various villages are often found traversing each others waters in order to access their various garden and coconut plantations.

Status of Turtles

Nesting areas in the past included on the small uninhabited island of Pakatel and two different beaches on the small island of Awei. The coast of Avok and the adjacent mainland are mainly mangals surrounded by seagrass beds, and are thus good feeding grounds for Green turtles, but not good nesting areas.

Today, the 2 beaches of Awei still have nesting turtles despite a few families from Avok 1 moving there in 1999. They reside at the nesting beaches but turtles still nest there. Only Hawksbill turtles have been observed nesting there. The TM has never observed a Green turtle nesting in his area, although it is an important feeding area.

The Avok vernacular names for the three commonly found species of turtle (nevu) are; Hawksbill - Nandarang

Green - Nevu naknagk
Olive Ridley - Nevu joinima'ay

The TM has never observed turtles hatching and has been unable to collect any data on number of eggs or hatchlings. All three turtle species have been observed feeding in the seagrass and mangroves areas. The Hawksbill is observed to feed in these areas as well as on the reefs, where it is thought to consume seaweed and possibly crab.

The Avok community concedes that turtle numbers have gone down in recent years. They associate this with increasing human population and over-harvesting of turtles and their eggs in the past.

Of additional interest is the statement given by both the chief of the village and the TM that their oral history indicates that New Yam was traditionally celebrated with the consumption of fish, not turtles. They have only recently adopted the custom found in the Maskelynes island of Uliveo of eating turtles with New Yam. For this reason, the custom of eating turtle at New Yam is not so firmly entrenched and they don't mind so much the idea of reducing turtle consumption and utilizing more fish for the New Yam Festival.

Other Comments

The TM has attended the Pelong Workshop in 1998, the Epau Workshop in 2003 and the current Pescarus Workshop in 2004 and has received turtle tagging training. He would like to know more about trochus breeding and out planting in order to reseed his village's reefs

Kami emphasized the importance of the work of the TMs, and how they must work closely with the chiefs to together manage turtle and other resources to ensure that future generations will have the opportunity to know and utilize these resources. One of Kami's goals is to establish a natural area to hold turtle hatchlings in order to give them a head start before releasing them into the wild.